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CHILDHOOD CHRONIC PAIN:

THE ABILITY TO COPE

by

Jennifer Dunn Geier

B.A. University of Windsor, 1979

M.A. University of Windsor, 1981

A Dissertation

Submitted to the Faculty of Graduate Studies
through the Department of Psychology
in Partial Fulfillment of the
Requirements for the Degree
of Doctor of Philosophy at the
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ABSTRACT

The purpose of the study was to investigate differences in mother-child interaction, child personality and family characteristics between adolescents who were coping with chronic benign intractable pain and adolescents who were not.

Adolescents were referred following thorough medical investigation. Participants were matched on age, sex and location of pain and differed on whether or not they were attending school. An exercise task, used to generate mother-child interaction, was scored using a response class matrix. Child personality was measured using the Personality Inventory for Children and family characteristics were assessed with the Family Adaptability and Cohesion Evaluation Scale. A pain diary was completed by each adolescent for one week.

There were no significant differences between the two groups in the amount and intensity of pain reported during the week that the diaries were kept. Both groups had suffered from the pain for a similar length of time. In addition, there were no statistical differences between the two groups on the personality or family measures. However, during the interaction task, there were clear behavioural differences in the behaviour of both mothers and adolescents depending on whether the adolescent was coping.. Non-copers expressed more pain, engaged in more

negative behaviour and were on-task less than the copers. Mothers of non-copers were found to exhibit more of all of the observed behaviours as compared to the mothers of copers. In addition, the mothers of non-copers discouraged coping and on-task behaviour significantly more often than the mothers of copers.

The results suggest a picture of a non-coping adolescent as one who is non-compliant, negative, and likely to give up and complain of pain when placed in a pain-oriented situation. In addition, the mother of a non-coping adolescent is likely to overprotect the child and intrude more with any type of behaviour that is exhibited.

Although the results do not demonstrate a causal relationship between parent-child interaction and coping, the findings lend general support to the operant conditioning model of the development of pain behaviours. In addition, Minuchin's model of overinvolvement and overprotection within the families of non-coping chronic pain patients was partially supported, as these were found to be maternal characteristics in pain-oriented situations. However, the non-coping adolescents did not perceive these to be characteristics of their family.

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TABLE OF CONTENTS

	Page
ABSTRACT	iv
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
 CHAPTER	
1. INTRODUCTION	1
The assessment of pain in adults	6
The assessment of pain in children	8
Children's understanding of pain and illness	11
Theories of the development of illness	
behaviours	14
Research related to the development of pain	
behaviour	17
Modelling influences	18
Family determinants of chronic pain behaviours	21
Family determinants of chronic pain behaviours	
in children	23
Summary	25
The present study	25
Hypotheses	28
2. METHOD	32
Subjects	32
Apparatus	36
Contact Procedure	36
Location and Physical Setting	36
Experimental Task	37
Measures:	
1) Mother-Child Interaction Task	39
2) Pain Diary	41
3) Personality Inventory for Children ...	42
4) Family Adaptability and Cohesion	
Evaluation Scale	44
5) Dependent Variables	45
3. RESULTS	47
Characteristics of Pain	47

Behavioural Variability over the Two Sessions	50
Hypothesis Testing	52
1) Observational Data	52
Child Antecedent Behaviour	52
Parent Behaviour	56
Child Antecedent-Parent Consequent Behaviours	56
Child Antecedent-Parent Consequent Behaviours: Absolute Values	59
Child Antecedent-Parent Consequent Behaviours: Percentages	61
2) Questionnaires	
Personality Inventory for Children	63
Family Adaptability and Cohesion Evaluation Scale	66
Discriminant Analyses	70
Child Antecedent Behaviour	72
Parent Behaviour	75
Child Antecedent-Parent Consequent Behaviour Absolute	75
Child Antecedent-Parent Consequent Behaviour Percentages	83
Personality Inventory for Children	84
Family Adaptability and Cohesion Evaluation Scale	84
Combination Discriminant Analysis	84
4. DISCUSSION	85
Characteristics of Pain	85
Observed Behavioural Differences	86
Adolescent Behaviour	87
Parent Behaviour	88
Questionnaires	
Personality Inventory for Children	92
Family Adaptability and Cohesion Evaluation Scale	94
Discrimination of Groups	95
Limitations of the Study	97
Implications for Treatment	97
Summary and Conclusions	99
Recommendations for Future Research	101

APPENDICES

A: Physician Referral Form	102
B: Daily Absence Record	104
C: Letter to Physicians	106
D: Informed Consent	108
E: Pain Diary	110
F: Response Class Matrices	113
G: Response Class Matrix: Definitions	116
H: Personality Inventory for Children	119

I:	PIC Clinical Scale Descriptions	133
J:	Family Adaptability and Cohesion Evaluation Scale	135
K:	Means, standard deviations and <u>t</u> -values for coping and non-coping subjects behaviour over the two sessions	138
REFERENCES		140

LIST OF TABLES

Table		Page
1	Age, sex, location of pain and school absence for copers and non-copers	35
2	Means, standard deviations and <u>t</u> -values for characteristic of pain variables over a one week period	49
3	Means, standard deviations and <u>t</u> -values of subjects' behaviour over two sessions	51
4	<u>F</u> -tests of sample variances for child antecedent behaviours	54
5	Means, standard deviations and <u>t</u> -values for child antecedent behaviours	55
6	<u>F</u> -tests of sample variances for parent antecedent behaviours	57
7	Means, standard deviations and <u>t</u> -values for parent antecedent behaviours	58
8	<u>F</u> -tests of sample variances for child antecedent-parent consequent behaviours-Absolute values	60
9	Means, standard deviations and <u>t</u> -values of child antecedent-parent consequent behaviours-Absolute Values	62
10	<u>F</u> -tests of sample variances for child antecedent-parent consequent behaviours-Percentages	64
11	Means, standard deviations and <u>t</u> -values of child antecedent-parent consequent behaviours-Percentages	65
12	<u>F</u> -tests of sample variances for the PIC	67
13	Means, standard deviations and <u>t</u> -values for PIC variables	68
14	<u>F</u> -tests of sample variances for FACES	69
15	Means, standard deviations and <u>t</u> -values for FACES	71
16	Stepwise Discriminant Analyses	76

LIST OF FIGURES

Figure		Page
1	Distribution of responses of coping and non-coping subjects	73
2	Distribution of responses of coping and non-coping subjects	74
3	Distribution of responses of the mothers of coping and non-coping subjects	78
4	Distribution of mother-child interaction responses	79
5	Distribution of mother-child interaction responses	80
6	Distribution of mother-child interaction responses	81
7	Distribution of mother-child interaction responses	82

CHAPTER 1

INTRODUCTION

Pain is a complex phenomenon. Melzack and Wall (1983) differentiate between three distinct types of pain. One type, referred to as transient pain, is of relatively brief duration and has little consequence. For example, transient pain would typically result from a stubbed toe or the prick of a needle. Acute pain, an intense pain of longer duration, is usually the result of tissue damage and stimulates changes in the autonomic nervous system. Patients with acute pain generally experience anxiety related to the meaning and severity of the pain, however, medical intervention usually alleviates the pain and the patient recovers. A third type of pain, chronic pain, is medically distinct from acute pain in that it persists in spite of all healing attempts (Bonica, 1974). In the literature, chronic pain has been defined as pain which has a minimum duration of 3 months. Physiological models which emphasize the identification and subsequent treatment of the underlying physical cause of pain are normally effective for acute pain but are frequently ineffective for patients with chronic pain. Chronic pain patients quickly become frustrated in their search for an effective treatment because "doctors are in the unfortunate position of not having much to offer" (Sternbach, 1974, p. 8). In addition, there is the

inherent risk of addiction to narcotics and repeated unsuccessful surgery. Melzack and Wall (1983) conclude that multiple physical and psychological causes interact to cause chronic pain states. As traditional physiological interventions have proved to be relatively ineffective in the alleviation of chronic pain, many clinicians have turned to psychology for assistance in the treatment of chronic pain.

An estimated 86 million people in the United States suffer from some form of chronic pain (Bonica, 1980). The cost of chronic pain to the American society has been estimated at 40 billion dollars annually by the National Institute of Health (Aronoff, Evans, & Enders, 1983). In spite of numerous etiologies which have been associated with chronic pain, many have noted the similarity of the personal, social and medical problems which confront these patients (Turk, 1979; Turner & Chapman, 1982). There is no doubt that chronic pain patients are faced with extensive adjustive demands. Turk (1979) comments on the extent of these demands:

All chronic illnesses represent assaults on multiple areas of functioning, not just the body. Patients with various chronic illnesses may face separation from family, friends, and other sources of gratification; loss of key roles; disruption of plans for the future; assault on self-images and self-esteem; uncertain and unpredictable futures;

distressing emotions such as anxiety, depression, resentment and helplessness; as well as such illness-related factors as permanent changes in physical appearance or in bodily functioning. (p. 291)

Despite the problems which are common to chronic pain, some patients do not allow their pain to interfere with their everyday life and succeed at making satisfactory adjustments. These individuals do not frequent the offices of health care providers to seek alternative treatments for their pain, although the pain that they experience is assumed to be no less severe. There has been some mention of these people in the literature, (Sternbach, 1974; Turk, 1979; Turk, Meichenbaum, & Genest, 1983), but little is known about the factors which may influence their adaptive process. An examination and comparison of both individuals who have been able to cope successfully with their pain and those making less satisfactory adjustments may help to clarify important factors in the coping process. This specific issue is particularly important in the area of childhood chronic pain.

Within the past two decades, the amount of research related to pain has increased substantially. However, the overwhelming majority of studies involving human subjects focus on adults and there is a lack of systematic research in the area of childhood pain. In a literature review from 1970 to 1975, Eland and Anderson (1977) found a total of 1,380 articles on pain, of which a mere 33 were related

to childhood pain. The vast majority of the 33 articles dealt with the diagnosis of specific diseases and provided minimal information on the non-medical assessment and treatment of pain or behaviours which may result from pain. Since 1975, there has been an increase in the number of investigations related to pain in children, but the area remains neglected relative to adult pain research.

There are two major reasons for increasing the current knowledge about childhood and adolescent pain patients (Jeans, 1983). The first reason is that our understanding of adult pain currently dictates the assessment and treatment of children's pain. This may lead to inadequate assessment and treatment of pain in children, as the experience of pain appears to be related to different stages of cognitive development (Beales, Holt, Keen, & Mellor, 1982(a); Bibace & Walsh, 1980; Perrin & Gerrity, 1981). In other words, children in different developmental stages have been found to have different perceptions of pain and illness.

A second reason for investigating childhood pain is that future research may enhance our current knowledge of the development of chronic pain in adulthood. Several researchers have hypothesized that past experience and early learning have a significant impact on the development of chronic pain (Apley, 1975; Melzack, 1973).

One group of children who experience chronic pain

experience chronic, intractable, benign (i.e., not malignant) pain which is present most of the time in various levels of intensity (Turk et al., 1983). These children have suffered from pain which does not respond to treatment for a minimum of three months. The pain experienced by these children may affect their participation in normal, everyday activities, such as going to school and playing with peers. However, the effects of this type of pain on the children themselves, as well as on their families, have not been well documented.

Thus, there appears to be a relative lack of research in three major areas related to chronic pain: 1) factors discriminating between those individuals who successfully adapt to their pain and those individuals who do not; 2) childhood pain in general; and 3) the role of the family in the development and perpetuation of non-coping and coping behaviours exhibited by chronic pain patients. The purpose of the present study is to investigate children with chronic intractable benign pain in an attempt to determine family interaction factors that are correlated with the ability to cope adequately with chronic pain as well as those factors related to the development of non-coping behaviours. Specifically, the study will examine whether the mother-child interaction within the family of a child who is not coping adequately with his/her chronic pain is different from that of a family in which the child is coping adequately. In addition, child personality and

family characteristics will be examined.

In order to provide the reader with the necessary background information, a number of relevant research areas will be reviewed. The following literature review begins with an overview of the methods which are currently available to assess pain in adults and children.

The Assessment of Pain in Adults

The assessment of pain is complicated by the fact that pain is primarily a phenomenological event. That is, it is virtually impossible to know what someone else's pain feels like because pain is an individualized experience. Moreover, a person's report of his experience of pain may be influenced by factors other than the sensory input, such as his interpretation of and meaning attributed to the pain (Beecher, 1959). However, a variety of different methods have been developed in an attempt to assess clinical pain. Four techniques which are currently available to assess adult clinical pain will be examined briefly.

In the clinical setting, measurements of pain have relied on verbal reports and behavioural descriptions. One method of pain measurement, referred to as an adjective scale, simply requires individuals to choose an adjective, such as mild, moderate or severe which best

describes the intensity of their pain (Kremer, Atkinson, & Ignelzi, 1981).

Another method, the Visual Analogue Scale involves a 10 cm. straight line with the ends labelled as extreme limits of pain experience. An individual is asked to draw a vertical line at the point on the line which describes his/her pain. The scale has been acknowledged as a reliable, sensitive measure of the intensity of clinical pain (Carlsson, 1983; Kremer et al., 1981). However, both the Visual Analogue Scale and the adjective scale are restricted to the unidimensional measure of pain intensity, and provide no information on other qualitative aspects of pain perception.

The McGill Pain Questionnaire has been found to be a highly reliable and valid multidimensional measure of clinical pain in adults (Melzack, 1975). The questionnaire contains a list of adjectives which describe sensory qualities (e.g., throbbing, shooting, cramping), affective qualities (e.g., suffocating, terrifying, tiring), and evaluative aspects (e.g., mild, distressing, excruciating) of pain. An individual is instructed to choose the words which best describe his current experience of the pain. The questionnaire yields two overall indices, a pain rating index and a present pain intensity measure. The questionnaire is widely used in clinical research with adult pain patients.

Recently, there has been an attempt to measure

behaviours which are the result of pain, rather than pain itself. Keefe and Block (1982) developed an observational method to assess pain behaviours. A significant relationship was found between individual ratings of pain intensity and the observation of discrete behaviours, such as grimacing, sighing, and guarded movement, ($r=.71$, $p<.01$). The study demonstrates the concurrent validity of observing everyday discrete behaviours to measure pain.

It should be noted that three of the four methods available to assess adult pain are primarily verbal in nature. For this reason, the methods developed to assess pain in adults have not always been appropriate for use in the assessment of childhood pain. As a result, different measures have recently been developed to measure childhood pain.

The Assessment of Pain in Children

The assessment of childhood pain is complicated by children's limited facility with language. However, a number of verbal and nonverbal techniques, which will now be examined, have been developed.

The Visual Analogue Scale is a self-report technique which has been used successfully with children as young as 5 years of age (Beales, 1982; Scott, Ansell, & Huskisson, 1977). The concurrent validity of this scale has been indicated in studies conducted by Vair (1981) and Abu-Saad and Holzemer (1981) which revealed systematic changes in children's scores following surgery.

Another self-report technique, the pain diary, requires a child to record the intensity of his/her pain four times a day, on a scale from 0 (no pain) to 5 (pain such that I can't do anything). In addition, the child is asked to record the following: other symptoms felt at the time, such as nausea or dizziness; any medication taken for the pain since the last recording; and possible causes for the degree of the pain, such as fatigue or physical exertion. A number of measures can be derived from the diaries, such as an index of overall pain intensity, peak intensity and the number of pain free days. The pain diary has been used successfully to measure headaches (Collins & Thompson, 1979). In addition, the inter-rater reliability of pain diaries was demonstrated in a recent study by Richardson, McGrath, Cunningham, and Humphreys (1983). This study revealed a high concordance between parent and child diaries.

Nonverbal techniques have also been developed to assess pain. For example, Stewart (1977) developed a pain-colour scale which requires individuals to pick the colour which corresponds to the intensity of their pain. Children were found to describe severe pain as being red. However, the potential usefulness of this technique depends upon the findings of future research.

Another nonverbal approach to childhood pain assessment is the use of projective techniques. Scott (1978) asked children between the ages of 4 and 10 to pick

out the colour, texture (e.g., sandpaper, terrycloth), shape (e.g., round, jagged), pattern (e.g., zig-zag, square patterns), and quality (e.g., on, off) which best described cartoons depicting a child hitting his thumb with a hammer and receiving an injection. Although there were a few significant results in the study, Scott concluded that they could easily have occurred by chance.

Hester (1979) developed a matching technique which equates the number of poker chips with the degree of pain. That is, 1 chip represented a little bit of hurt and 4 chips represented the most hurt. In a sample of 44 children ranging in age from 4 to 7 years, Hester found a significant correlation between the number of chips chosen and a child's verbal response to injection, ($r=.453$, $p<.002$).

Barr (1983) notes that pain is also expressed by nonverbal reactions, such as facial expression and degree of physical activity. However, the majority of techniques of pain measurement in children assess the intensity and/or the meaning of pain. One recent study (McGrath, Goodman, Johnson, Schillinger, Dunn & Chapman, 1984) describes the development and validation of an observational method of measuring pain in the post-operative setting. However, there has been no attempt to develop an observational method to assess pain behaviours in children with chronic pain similar to that developed by Keefe and Block (1982) for adults.

In conclusion, it has only been within the past

decade that psychologists have attempted to develop techniques to assess childhood pain. Currently, the Visual Analogue Scale and the pain diary are the two methods most frequently used in research with childhood pain patients. However, additional research is needed to determine the reliability and validity of many of the recently developed techniques.

Studies which assess pain in chronic pain patients have revealed a number of psychosocial and family factors which are influential in the expression of pain. Prior to an examination of these studies, it seems important to look at the more general developmental issue of children's understanding of illness and pain.

Children's Understanding of Pain and Illness

The findings of the six major studies which have investigated children's understanding of pain and illness will be reviewed.

Campbell (1975) interviewed 6 to 12-year-old children and their mothers to investigate their understanding of illness. The results indicated a systematic developmental trend. Young children defined illness in terms of feelings (e.g., "It feels bad."), while older children, although not ignoring feelings, made reference to specific diseases and the effects of the illness on everyday activities. With increasing age, children's definitions of illness were found to become more diverse and to

correspond more closely with that of a typical adult.

Two recent studies suggest that the developmental progression in the understanding of illness is roughly in accordance with Piaget's stages of cognitive development (Bibace & Walsh, 1980; Perrin & Gerrity, 1981). Healthy school age children were interviewed in both studies. The majority of children in Piaget's pre-operational stage thought that magical phenomenon and/or the breaking of rules caused illness. Definitions given by children of this age frequently included external signs of illness (e.g., "You have to stay in bed."), and recovery was expected to occur automatically by following a set of rules for ill people (e.g., "You get better if you drink chicken soup."). Concrete operational children understood that illness is caused by germs but had a limited understanding of how germs cause illness or the role of internal physiology in healing. It was not until 11 or 12 years of age that children understood the complexity of illness. For example, children of this age could typically explain several interrelated causes of illness and discuss how the body responded differentially to a specific cause.

The development of the concept of pain has also been investigated. Jeans (1983) asked healthy children to draw a picture of pain and to discuss their pain experiences and methods of coping. Her results indicated that children initially describe pain as a predominantly physical concept and begin to include psychological

aspects, such as feelings of sadness, at approximately 11 years of age. Coping strategies developed in a parallel fashion, with younger children using physical techniques (e.g., rubbing, resting), and older children using psychological strategies (e.g., distraction).

Children who have had more experience with pain appear to develop their understanding of illness and pain in a similar manner. In a study of hospitalized 9 to 12 year-old children, younger subjects attributed the cause of illness to physical events while older subjects included a psychological view (Savendra, Gibbons, Tesler, Ward, & Wegner, 1982). Beales et al. (1982a) found that children with juvenile chronic arthritis, below 11 years of age, were primarily concerned with the immediate, physical results of their illness (e.g., knees ache), and were less aware of the internal pathology. These children were not found to regard their condition as significant as long as it did not interfere with play activities. In contrast, children between the ages of 12 and 17 understood their condition as a manifestation of internal pathology and were aware of the long-term implications of the disease. The condition was looked upon as a disaster when a child reached puberty and began to examine its implications for fulfilling adult goals, such as education, marriage and careers.

The above studies indicate that children's understanding of and reaction to illness and pain are

related to their age level. That is, with increasing age children become aware of the potential long-term effects of illness and their definitions of illness become more complex. This being the case, theories related to the development of illness behaviour will now be examined.

Theories of the Development of Illness Behaviours

The sick role was first described by Parsons (1951) as the set of behaviours and expectations that are associated with being sick in a given society. For example, in the North American society, the sick role would include behaviours such as staying in bed during the day, visiting doctors and complaining when one feels ill. People who feel ill are usually excused from normal obligations, such as attending work or school, and typically receive sympathy and understanding from significant others. However, Parsons emphasized that the sick role is a conditionally legitimate state which is only permitted if the individual does not enjoy it and feels obligated to cooperate with others to get well as soon as possible. In addition, Parsons stipulated that remaining in the sick role depends on physical and/or medical evidence of real illness.

People who assume the sick role exhibit an increased rate of illness behaviour. Mechanic (1961) described illness behaviour as the different ways in which people perceive, evaluate and act on physical symptoms. For example, complaining, moaning, grimacing or being off sick

from work or school because of illness are typical illness behaviours.

Chronic pain patients who are not coping adequately and whose pain is not related to organic pathology are often assumed to have taken on the sick role illegitimately, as there is no known physical or medical cause for their pain. Relative to the amount of disease, a disproportionate amount of illness and pain behaviours are exhibited by these patients. For adults, a common pain behaviour which is used in the evaluation of chronic pain treatment is work absence (Aronoff et al., 1983). Similarly, school absence has been suggested as a useful criterion of how well children are coping with pain of unknown organic origin (Green, 1983).

There is a lack of information about the process of becoming a chronic pain patient (Sternbach, 1974), and the factors underlying the ability to cope with pain. However, four major theories have been formulated in an attempt to explain the development of chronic pain that is independent of organic disease.

One major theory which takes a psychiatric perspective of the development and maintenance of pain behaviours emphasizes three possible gains that the pain patient may acquire by remaining in the sick role. An individual may reduce intrapersonal conflict or stress when he/she engages in illness behaviour; this is referred to as primary gain. Secondary gain refers to the

interpersonal advantages that a person in pain may receive, such as sympathy and attention from others (Kolb, 1973). Finally, someone other than the pain patient may receive advantages from the patient's illness behaviour, which is referred to as tertiary gain (Bokan, Ries, & Katon, 1981). Bokan et al. (1981) emphasize that significant others such as spouses, parents or even health care professionals may meet their own emotional or material needs by inducing or maintaining pain behaviours in others.

A number of researchers contend that specific personality traits are associated with chronic pain. These individuals have attempted to differentiate between people with pain who cope and those who do not by examining personality traits. For example, hypochondriasis and depression, as measured by the Minnesota Multiphasic Personality Inventory (MMPI), have been found to be characteristic of adult non-coping chronic pain patients (Sternbach, 1974). However, whether these personality traits are the cause or the result of chronic pain remains a controversial issue.

Proponents of the operant theory contend that the illness and pain behaviours exhibited by patients who are not coping adequately with their pain are the result of three basic learning processes: 1) direct, positive reinforcement of illness and pain behaviours; 2) avoidance learning in which an individual's illness or pain behaviours allow him/her to avoid unpleasant

situations or responsibilities; and, 3) vicarious learning, where an individual witnesses other people reinforced for illness behaviour (Fordyce, 1976; Melamed & Siegel, 1975; Wooley, Blackwell, & Winget, 1978).

The fourth and final theory is concerned with the family's role in promoting and maintaining illness and pain behaviours for which there is no known organic cause. Families of these patients have been described by Minuchin (1974) as being "characterized by enmeshment, overprotectiveness, rigidity and a lack of conflict resolution". (p. 242) The family members are assumed to be overly involved with each other and with the care of the ill member. The illness is believed to provide a family focus which permits the family to avoid confrontation and conflict.

The four theories describe a number of different factors which may be important in the development of pain behaviour, however, there is a common assumption upon which all four theories are based. That is, unlike acute pain, chronic pain behaviours are not directly related to organic pathology, but are often influenced by the pain patient's psychological, family and physical environment. This assumption has been supported by empirical research.

Research Related to the Development of Pain Behaviour

The four major theories previously discussed assume that psychosocial factors are influential in the development of illness and pain behaviours. A number of

studies have supported this assumption. Cultural differences have been found to be related to an individual's ability to tolerate pain (Weisenberg, 1977). For example, Zborowski (1969) reported that an individual's reaction to and attitude towards pain was influenced by ethnic origin. His study revealed that "Old Americans" (i.e., individuals whose ancestors had lived in the United States for more than three generations) react to pain by withdrawal and only cry out or complain when alone. In contrast, individuals of Jewish or Italian origin were found to complain frequently and seek support and sympathy openly. The cross-cultural variations infer that underlying attitudes are an important determinant of differences in pain tolerance and expression. Several researchers have assumed that cultural differences reflect a process of observational learning and as a result have investigated the influence of modelling in this area.

Modelling Influences

In the laboratory setting, studies of induced pain have demonstrated the significance of modelling on adult's experience and expression of pain. Subjects in a study conducted by Craig and Weiss (1971) were asked to rate the intensity of incremental shocks while observing the rating of a confederate model. The model's ratings were ostensibly in response to the same shock levels that the subjects were receiving. The results indicated that

subjects exposed to a 'tolerant' model (i.e., one who showed less discomfort than the subject in response to increasing shock levels) had an increased threshold for pain in comparison to subjects exposed to an 'intolerant' model (i.e., one who showed signs of more discomfort than the subject to shock levels). In another investigation, subjects exposed to 'tolerant' models showed no increase in autonomic measures of distress (Craig & Neidermayer, 1974). In addition, Craig, Best, and Reith (1974) found that subjects simulated model's reports of increasing discomfort even though they were receiving constant levels of low intensity shocks not normally perceived as painful. The above studies demonstrate the significant influence that a model has on adult's experience and expression of pain in a laboratory setting.

Modelling processes have also been shown to modulate pain experience and expression in various natural settings. In an attempt to determine the origins of children's uncooperative and fearful behaviour during dental examinations, Shoben and Borland (1954) found that the most influential factor was the experience and attitude of one's own family toward dental care. Similarly, Johnson and Baldwin (1968) reported that children's behaviour during tooth extractions was directly related to their mother's level of anxiety. That is, children of mothers with high levels of anxiety were more uncooperative and fearful than those whose mothers were less anxious.

Exposure to models who displayed realistic reactions and coping responses to painful circumstances has recently been demonstrated as an effective therapeutic technique in the treatment of children's fears of dental care, surgery and injections (Melamed, Hawes, Herby, & Glick, 1975; Melamed & Siegel, 1975; Vernon, 1974).

Turkat (1982) investigated the role of parental modelling in the etiology of diabetic illness behaviour. Twenty-seven diabetic adults were divided into two groups on the basis of reported parental behaviour when ill. Subjects whose parents avoided work, chores, or other activities when ill were referred to as the avoidant-model group. The non-avoidant model group reported that their parents did not alter their activities when ill. Both groups were required to provide retrospective and current information about their own illness behaviour. Results suggested that modelling is an important factor in differential behavioural reactions to similar medical pathology as the avoidant model group was significantly less likely to meet responsibilities when ill.

The research in this area has consistently demonstrated that exposure to both experimental and family models significantly affects subjects' reports of and reaction to pain. Thus, observational learning appears to be a significant factor in the determination of whether an individual will exhibit adaptive coping responses or inappropriate, non-coping pain behaviours when confronted

with experimentally induced or acute pain. Similarly, there has been a small amount of research related to the role of the chronic pain patient's family in the development and perpetuation of pain behaviours.

Family Determinants of Chronic Pain Behaviours

Health care providers have recently begun to show an interest in the role of the family in the development and maintenance of chronic pain. Engel (1959) first described 'pain-prone patients' as individuals who had experienced an unhappy childhood which included physical and emotional abuse, rejecting fathers and punishing mothers. In a retrospective study, Merskey and Boyd (1978) compared the emotional adjustment of chronic pain patients with and without an organic basis for their pain. Although there were similarities between the two groups, patients with no organic basis for their pain reported significantly more evidence of an unhappy childhood than did patients with organically based pain. However, the results of the study are questionable as they are based on retrospective data.

The author is aware of only two studies which have investigated the role of current family factors in adult chronic pain patients. Swanson and Maruta (1980) administered a questionnaire to 100 chronic pain patients and a primary family member to determine their respective view of the pain problem. Subjects independently answered questions related to their perception of the pain problem (i.e., duration, location, severity and influence of the

pain on other functions, such as sleep, sex life, work, etc.). In general, a high level of agreement between patients and their families was found. Interestingly, at a 1 year follow-up, patients whose relatives least often agreed with their perception of the pain problem were doing significantly better than those whose families' perception was similar. The authors concluded that, although communication about the adjustive demands of the pain problem is important, it should not dominate the family's life.

Block, Kremer, and Gaylor (1980) demonstrated that a spouse's reaction influences the extent to which a chronic pain patient will display pain behaviours. Prior to a taped structured interview, pain patients were informed that their spouse and a neutral person would individually observe a specified portion of the interview. Chronic pain patients who reported that their spouses were relatively non-solicitous in responding to pain behaviours reported significantly lower pain levels when they thought their spouse was observing than when they thought a neutral observer was present. Results suggest that significant family members can serve as a discriminative cue for a pain patient to alter his/her report of pain level. The findings support Fordyce's (1976) operant model that pain behaviours can become a function of reinforcement contingencies.

Both of the previous studies suggest that a patient's

family may play an important role in the maintenance of chronic pain behaviour in adults. That is, significant others can have an effect on whether an individual with chronic pain develops adaptive, coping behaviours or non-adaptive, non-coping behaviours. Studies related to the role of the family in childhood chronic pain have also been conducted.

Family Determinants of Chronic Pain Behaviours in Children

A number of studies have been conducted on a specific type of childhood chronic pain, the recurrent abdominal pain syndrome. For example, Oster (1972) reported that children with abdominal pain were more likely to have parents with a history of similar pain problems than children without abdominal pain. Apley (1975) found a similar family pattern of pain-related illnesses in a sample of 1100 school children. In addition, those children with pain that could not be attributed to organic pathology were more likely to have a family history of pain syndromes than children with organically-based pain. However, Christensen and Mortensen (1975) found that children's pain behaviour was related to current parental attitude towards pain rather than to past histories of pain. The incidence of children's complaints was related to concurrent parental symptoms but was not related to parental abdominal pain during childhood.

Apley (1975) concluded that the reinforcement of pain behaviours and parental preoccupation with their

children's state of health were important psychological processes in the development of the recurrent abdominal pain syndrome. However, it is important to note that family similarities in pain experience may reflect genetic predispositions as well as social learning processes. Apley (1975) indicated that it was difficult to separate the role of constitutional and social factors, as abdominal pain which resulted from organic dysfunction also recurred in families. Therefore, it appears that social learning as well as biological factors may be influential in the development of recurrent abdominal pain.

Very little research has been conducted on how families or the children themselves cope with chronic pain. Beales, Holt, Keen, and Mellor (1982b) investigated the coping styles of 75 families in which one child suffered from the pain of juvenile arthritis. The results indicated that both parents exert a major influence on how children cope with their pain. The non-coping styles referred to as overdependence, denial, and withdrawal were found to occur most frequently in children whose parents used similar styles. However, the validity of the study is questionable as the coping styles were determined by the unblinded, subjective judgement of the principal investigator.

In conclusion, the above studies indicate that there is a relationship between the presence of pain complaints

in family members and the incidence of chronic pain in children. The implication of the research is that environmental factors play a role in the development of chronic pain behaviour in children.

Summary

A number of general conclusions can be drawn from the literature reviewed to this point: (1) with increasing age, children's knowledge of the concepts of pain and illness develops from a belief in magical causes and physical alleviation techniques to an understanding of numerous interrelated causes and the use of psychological as well as physical interventions; (2) the four major theories which attempt to explain the development of chronic pain are based on the assumption that a patient's psychological, physical and family environment are influential in the process of becoming a chronic pain patient; (3) observational learning has been shown to be an influential factor in a person's reaction to experimentally induced and acute pain; and (4) there is preliminary evidence that an individual's family plays a significant role in the maintenance of chronic pain behaviours.

The Present Study

The present study was based on the research related to family determinants of childhood chronic pain. This research suggests that individuals who are not coping with

their pain have or have had parents with a history of pain-related illnesses who may have modelled pain behaviour and/or reinforced the development of chronic pain complaints (Apley, 1975; Christensen & Mortensen, 1975). The implication of these findings is that the families of children who are coping successfully with their chronic pain communicate differently than the families of children who are not coping. However, the majority of the studies in this area include only non-coping chronic pain patients and, as a result, we can only speculate about the family interactions of those individuals who are coping with their pain. Do family members of a child who is not coping adequately with his/her chronic pain communicate different messages (i.e., messages which reinforce the non-coping pain behaviours) than family members of a child who is coping successfully? This precise issue has not been dealt with in the literature.

It was the principal purpose of the present study to investigate this phenomenon by observing mother-child interactions when the adolescent was placed in a pain-oriented situation (i.e., doing physical exercises). In addition, information about the adolescent's perception of the family situation and the mother's perception of the adjustment of the adolescent was obtained by having them complete the Family Adaptability and Cohesion Evaluation Scale and the Personality Inventory for Children,

respectively.

In view of the fact that the study was conducted in a laboratory, an important issue was whether or not a family's behaviour in a clinical setting was representative of their behaviour at home. There is a paucity of research on this question, and the few studies which have compared individual's behaviour across the two settings have yielded conflicting results (O'Rourke, 1963; Rapoport & Benoit, 1975; Riskin & Faunce, 1972; Zangwill & Knisker, 1982). In the present study, it was not possible to deal directly with the issue of representativeness by comparing subjects' behaviour in the laboratory with their behaviour at home. However, the temporal stability of the observed mother-child interaction was examined. Although temporal stability by no means proves representativeness, it is an important concern as it would be difficult to contend that observed behaviours represent a regular pattern of mother-child interaction without some degree of consistency in behaviour across time.

Finally, although clinicians assume that the degree of pain experienced by individuals who are coping is the same as that felt by people who are not coping, there is no empirical evidence that this is indeed the case (Sternbach, 1974). Furthermore, intensity of pain may have been a confounding variable in the present study. For the above two reasons, subjects were asked to provide an index of the intensity of their pain. In addition, subjects were asked how long they had been suffering from

the pain in order to provide an indication of the pain's duration.

In order to avoid problems associated with confounding disease and pain, the study excluded those adolescents who had a serious disease underlying their pain and focused only on those who had chronic intractable benign pain.

Hypotheses

The author was not aware of any study which compared the intensity or duration of the pain experienced by coping and non-coping chronic pain patients. However, the literature assumes that the two groups experience the same intensity of pain (Sternbach, 1974; Turk, Meichenbaum, & Genest, 1983).

(1) It was expected that there would not be a significant difference between the mean pain intensity level, mean peak intensity, mean pain free days or mean duration of pain reported by the coping and non-coping groups.

In the present study, it was expected that, when placed in a pain-oriented situation (i.e., doing 15 minutes of physical exercises), non-coping adolescents would react differently than coping adolescents. Specifically, non-coping adolescents were expected to communicate their inability to complete the required exercise tasks at a higher rate than adolescents who were coping with their chronic pain.

(2) Non-coping adolescents were expected to emit more verbal expressions of pain than coping adolescents.

(3) Non-coping adolescents were expected to emit more off-task and less on-task behaviour than coping adolescents.

(4) Non-coping adolescents were expected to emit more negative behaviour than coping adolescents.

The mothers of non-coping adolescents were expected to behave differently than the mothers of coping adolescents during the interaction task.

(5) Mothers of non-coping adolescents were expected to discourage coping behaviour more often than mothers of coping adolescents.

(6) Mothers of non-coping adolescents were expected to encourage coping behaviour less often than mothers of coping adolescents.

The mother-child interaction involving a child who was not coping adequately with his/her chronic pain was expected to be different from the mother-child interaction involving a child who was coping well with his/her chronic pain. The mothers of non-coping adolescents were expected to reinforce their children's attempts to avoid completing the tasks and discourage on-task behaviour. Conversely, the mothers of coping adolescents were expected to reinforce their children's attempts to complete the tasks and discourage attempts to avoid completing the tasks.

These expectations were reflected by the following hypotheses.

(7) Mothers of non-coping adolescents were expected to emit more comments which encouraged the expression of pain, negative behaviour and off-task behaviour as compared to the mothers of coping adolescents.

(8) Mothers of non-coping adolescents were expected to discourage on-task behaviour at a higher rate than mothers of coping adolescents.

There has been no previous research related to personality characteristics of adolescent chronic pain patients. Research which has investigated personality characteristics of chronic pain patients has focused on non-coping adults (Sternbach, 1974). In the present study, it was expected that the personality profiles of non-coping adolescents would differ from those of coping adolescents on the dimensions of adjustment and somatic concern.

(9) On the PIC, it was expected that non-coping adolescents would be perceived as being less well adjusted and as having more somatic concern than the coping adolescents.

Finally, there is very little research about the family relationships of pain patients. However, Minuchin (1974) formulated a theory that the families could be described by the following characteristics: enmeshment, overprotectiveness and rigidity.

(10) On the FACES, it was expected that non-coping subjects would describe their family as being more enmeshed on the cohesion scale and more rigid on the adaptability scale as compared to coping subjects.

CHAPTER 2

METHOD

The study involved the observation of 10 non-coping adolescents and 10 coping adolescents when placed in a pain-oriented situation, in the presence of their mothers. In addition, the mother's perception of the adolescent as well as the adolescent's perception of his/her family were examined.

Subjects

Adolescents seen in the Orthopedics, Neurology, Physical Medicine and/or Physiotherapy services of the Children's Hospital of Eastern Ontario and who met the following criteria were potential subjects for the non-coping group in the study.

Criteria included:

- (1) Adolescent was between the ages of 11 and 17 years.
- (2) Major complaint was pain of greater than 3 months in duration. The pain experienced could be shoulder, back, stomachache or headache.
- (3) Adolescent was judged by his/her physician to have chronic benign intractable pain which did not warrant school absence (Appendix A).
- (4) Adolescent had missed 3 or more days of school each month for the past 2 months because of pain and was continuing to miss school (Appendix B). Reasons for school absence were obtained from the subject's mother.

Exclusion criteria included:

- (1) Presence of serious or life-threatening illness, such as cancer.
- (2) Presence of mental retardation, mental illness, or major behaviour disorder.

Adolescents assigned to the coping group were subject to the same exclusion criteria as the non-coping subjects and met the first three criteria, but did not meet the fourth criterion. That is, adolescents in the coping group did not have a school absence problem.

School attendance was thus used to operationally distinguish between those subjects who were coping adequately with their chronic pain and those who were not. Attendance was chosen as the crucial distinguishing variable because it is an indication of the extent to which an adolescent is fulfilling his/her academic and social obligations. As the non-attendance criterion was at least three times greater than the estimated absentee rate due to normal illness (Levanto, 1975), the subjects in the non-coping group represented a highly select group of adolescents. Attendance was confirmed by school records with written consent from the child's parents (Appendix B).

Physicians were sent a letter describing the study and the criteria for subjects (Appendix C). Out of a total of 15 referrals for the non-coping group, 10 adolescents participated in the study. The other five adolescents who were referred were eliminated for a

variety of reasons: one because of an inability to speak English; two because of not falling into the age range; one adolescent refused to participate; and finally one adolescent who participated in the study but was eliminated because of an inability to find a coping subject who matched on the specified variables.

Subjects in the coping group were matched with subjects in the non-coping group on age (within 6 months), sex and location of pain. The mean age for both the non-coping and coping subjects was 13 years, 5 months. Twelve of the 20 subjects were female and 8 were male. Four of the subjects suffered from knee pain, 10 from stomachaches and 6 from headaches. Mean school absence as the result of pain for the non-coping group was 14.7 days over a 2 month period as compared to a mean of .40 days for the coping group. A t -test on school absence indicated a significant difference between the groups, $t(18)=5.48$, $p<.001$, with non-copers missing significantly more school than copers. Mean grade level was 8.0 for the non-coping group and 8.6 for the coping group. There was no significant difference between the two groups on grade level. The age, sex, location of pain and number of days missed at school for all subjects is presented in Table 1.

The 20 participating families consisted of 15 intact nuclear family units and 5 single parent families. Eight of the families of non-coping adolescents and seven of the families of coping adolescents were intact.

Table 1

Age, sex, location of pain, and school absences for
copers and non-copers

Location of Pain	Sex	Copers		Non-copers	
		Age (yr/ mth)	School Absence (days)	Age	School Absence (days)
knee	F	15.06	0	15.00	30
stomach	M	12.09	2	12.08	14
knee	F	16.11	0	16.10	30
head	F	12.11	0	13.00	10
stomach	F	14.00	0	14.00	12
stomach	M	11.03	2	11.00	9
head	F	15.07	0	15.06	12
head	F	12.02	0	12.02	10
stomach	M	12.03	0	12.02	9
stomach	M	15.07	0	15.01	11
<u>M</u>	-	13.05	.4	13.05	14.7

Apparatus

A Panasonic VW-3303 videocamera and PV-A32E-K videorecorder were used to videotape the mother-child interaction during the required tasks and a portable tape recorder was used to provide a 5-second interval signal. In addition, a 30 cm. high wooden block and a 4 kilogram weight were used in the exercise tasks.

Procedure

Contact Procedure

Once a referral was received from the physician, the experimenter contacted the family by telephone to discuss their potential involvement in the study. At that time, the experimenter explained the general nature of the study in terms of examining adolescents' reactions to pain-oriented situations as well as variety of other situations and explained what participation in the study would involve. If the family agreed to participate, an appointment was arranged with the subject and his/her mother.

Location and Physical Setting

All families were seen at the Child Study Centre, University of Ottawa.

The procedure required the use of two rooms. The room used for the experimental task contained a stationary videocamera, the apparatus needed for the exercise tasks and a couch. A single microphone was placed on the table beside the couch.

A small room across the hall was used to house the videorecorder. The experimenter remained in this room in order to operate the recording equipment.

Experimental Task

At the appointment, the subject and his/her mother were asked to sign informed consent forms to agree to participate in the study (Appendix D). The consent form indicated that the exercise tasks would be videotaped. Following this, the subject was asked to do three exercise tasks while his/her mother observed each exercise completed. The exercise tasks requested of the child were chosen in an attempt to simulate as closely as possible the daily activities in which these adolescents typically experienced pain (i.e., while playing sports or engaging in everyday activities such as climbing stairs). The referring physician ensured that the tasks were appropriate for each child and would not cause any physical harm (Appendix A). The tasks were presented by the investigator who read the following instructions to the adolescent while in the presence of his/her mother:

During the next 15 minutes, your job is to complete three different exercise tasks. Please work on each exercise for a maximum of 5 minutes. You will be told when 5 minutes are over by the voice on the tape recorder and you will then be reminded of the next exercise. In addition, please try to do each exercise at the rate of one repetition every 5 seconds. A signal on the tape recorder (the word Now), will occur every 5 seconds, so try to complete one repetition in between each signal.

The first task consists of stepping onto this platform and then stepping down. Please alternate your feet when stepping up and down (the experimenter demonstrated). Try to step up and step down once between each signal. Continue working on the task until the voice on the tape recorder tells you to move on to the next exercise.

The second task consists of a bent-knee sit-up. With your mother holding your feet and keeping your hands in front of yourself, try to complete one sit-up between each signal (the experimenter demonstrated). Continue working on this exercise until the voice on the tape recorder tells you to move on to the next task.

The third and final exercise is an arm curl with this weight. Standing with your elbow resting against your stomach, hold the weight in the hand that you do not write with and lift it from your leg up to your shoulder and lower it down again. Please try to do one repetition between each signal.

Your doctor has assured me that these exercises will not cause you any harm. Please do as many repetitions as you feel is advisable but do not do more than one repetition in between each signal. You may stop working on the exercises at any time that you begin to feel too tired or it begins to hurt too much.

The adolescent's mother was then read the following instructions in the presence of the adolescent:

Your job is to observe your child as he/she completes each exercise task. Please have your child do as many repetitions as you feel is advisable. Please feel free to assist your child in anyway. In addition, please feel free to talk to your child during the next 15 minutes.

I'll be in the room across the hall and I'll come back when you have completed the tasks or when 15 minutes have passed. Are there any questions? If not, I'll go and you can begin when the tape recorder signals you to. Please wait for the signal.

When the instructions had been read the experimenter turned on the tape recorder and left the room. The interaction between the mother and the child was

videotaped.

When 15 minutes had passed, the experimenter joined the subjects. At that time, the pain diary was explained and the subject was asked to keep the pain diary over the following week (Appendix E). The adolescent was asked to bring the completed pain diary to the next appointment which was scheduled for one week later. In addition, the adolescent was asked to indicate how long he/she had suffered from the pain.

The second session was an identical replication of the first, except that the adolescent was not requested to complete another pain diary. After the exercises had been completed in the second session, the mother was asked to complete the Personality Inventory for Children (Wirt, Lachar, Klinedinst, & Seat, 1977) and the adolescent was asked to complete the Family Adaptability and Cohesion Evaluation Scale (Olson, Portner, & Bell, 1982).

The exercise tasks were in no way intended to be a measure of pain threshold or tolerance but were part of a situation designed to elicit pain behaviours and mother-child interactions.

Measures

1) Mother-Child Interaction Task

The mother-child interaction during the exercise tasks was scored using a variation of Mash and Terdal's response class matrix (Mash & Terdal, 1981). The response

class matrix provides information about the antecedents and consequences of a given behaviour and captures the reciprocal nature of an interaction.

The matrix has been used successfully to measure the parent-child interaction of hyperactive children. For example, Mash and Terdal (1981) reported excellent inter-rater reliability (percent agreement above .87) for all of the categories which occurred more than 10% of the time. In addition, Oliver (1981) demonstrated the validity of a child-teacher variant of this technique when she found a significant relationship between a number of the categories and the Conner's Teacher Rating Scale.

In the present study, the mother-child interaction during the tasks was scored in terms of mother antecedent-child consequent behaviour and child antecedent-mother consequent behaviour. Each videotape was therefore scored twice. The matrices used for scoring purposes are contained in Appendix F. Operational definitions of the behaviour categories are found in Appendix G. Child behaviours were classified into four categories: pain expression, on-task, off-task and negative. The categories of parent behaviour were different depending on whether the behaviour was antecedent or consequent. There were five categories of parent consequent behaviour: encouraging, discouraging, interaction, request/command, and no response. The five parent antecedent behaviour categories were encourage coping, discourage coping, interaction, request/command, and no response.

The videotapes were scored at 10 second intervals, yielding a total of 180 behavioural samples per subject. If more than one interaction occurred in a 10 second interval, the last complete interaction during the interval was recorded.

An individual who was blind to the designated group of each subject served as the primary coder of the mother-child interactions. The author served as the reliability judge for 25% of the tapes which were randomly selected. Kappa values (Cohen, 1960) were computed as an index of inter-rater reliability for the child antecedent, parent consequent, parent antecedent and child consequent behaviours. Results revealed kappa values of .85 for child antecedent behaviour, .94 for parent antecedent behaviour, .85 for child consequent behaviour, and .92 for parent consequent behaviour. Landis and Koch (1977) indicate that kappa values above .81 indicate an almost perfect level of agreement. This index is preferable to the use of percent agreement as it corrects for chance expected agreement (Kramer & Feinstein, 1981).

2) Pain Diary

The pain diary is a self-report technique which requires an individual to record the intensity of his/her pain four times a day on a scale from 0 (no pain) to 5 (pain such that I can't do anything). Individuals also record other symptoms felt at the time, any medication

taken and possible causes for the pain. Richardson, McGrath, Cunningham and Humphreys (1983) demonstrated the inter-rater reliability of pain diaries.

The pain diaries were used primarily as an index of overall pain intensity (Appendix E). Pain intensity was calculated by summing the intensity ratings for the one week period. This value was prorated if there were more or less than 28 ratings in the one week period. In addition, the number of pain free days and the peak intensity rating were calculated. Pain free days was the number of days during the week in which all four ratings were zero. Peak intensity was the highest pain intensity rated during the one week period.

3) Personality Inventory for Children (PIC)

The PIC is a 600-item True-False questionnaire developed by Wirt, Lachar, Klinedinst and Seat (1977) to yield personality descriptions of children between the ages of 3 and 16 (Appendix H). The questionnaire was designed to be completed by a significant other, usually the child's biological mother who responds to the questions according to her opinion of her child's behaviour.

A total of 33 empirically and rationally derived scales can be scored from the PIC. However, the 16 scales of most significance are three validity scales, one screening scale for maladjustment and 12 clinical scales. The three validity scales (Lie, F, and Defensiveness)

identify a parent's tendency to be defensive about their child's behaviour as well as response sets. Poor psychological adjustment and a need for psychological evaluation are measured by the Adjustment scale. The 12 clinical scales (Achievement, Intellectual Screening, Development, Somatic Concern, Depression, Family Relations, Delinquency, Withdrawal, Anxiety, Psychosis, Hyperactivity, and Social Skills) suggest an increasing likelihood of pathology with increasing positive deviation from the mean. Appendix I contains a description of the clinical scales. T-scores are derived from the raw scores on each of the 16 scales and can be plotted on profile sheets for males and females.

Norms were developed on a large normative sample ($N=2390$) of approximately 100 children of each sex at each age level between 5.5 and 16.5 years of age.

Wirt, Lachar, Klinedinst and Seat (1977) reported that six of the clinical scales (Adjustment, Achievement, Intellectual Screening, Delinquency, Psychosis, and Hyperactivity) predicted an independent external criterion (such as teacher rating of hyperactivity, academic achievement or diagnosis of psychosis). Since that time, several studies have found the PIC profile scales to predict meaningful independent external criteria (Gdowski, 1978; Lachar, Butkus, & Hryhorczuk, 1978).

The manual indicates that test-retest reliability was high (average reliability coefficient=.86) over a mean

period of 15.2 days for a sample of 34 clinical patients.

4) Family Adaptability and Cohesion Evaluation Scale (FACES)

FACES is a 30 item scale developed by Olson, Portner and Bell (1982) to measure an individual's perception of his/her family (Appendix J). The items are at a seventh grade reading level and individuals respond to them on a five-point response scale ranging from almost always to almost never. The scale measures two dimensions of family behaviour: cohesion and adaptability. The first dimension, cohesion, is defined as "the emotional bonding that family members have toward one another". (Olson, Portner & Bell, 1982, p. 5). There are four levels of cohesion which range from extremely low (disengaged) to extremely high (enmeshed). The two middle levels referred to as separated and connected are considered to be characteristic of more balanced families.

The second dimension, adaptability, is defined as "the ability of a marital or family system to change its power structure, role relationships, and relationship rules in response to situational and developmental stress" (Olson, Portner & Bell, 1982, p. 5). The four levels of adaptability range from extremely low (rigid) to extremely high (chaotic), with the two mid-range levels referred to as flexible and structured.

The scale is designed so that it can be administered twice; the first administration to determine how an individual currently sees his/her family and the second to

determine how they would ideally like it to be. A comparison of the two administrations enables one to assess the level of satisfaction within the family system as well as providing information on how the individual would like to see their family change.

Cohesion scores range from 16 to 80 while adaptability scores range from 15 to 70. The normative sample consisted of 2,082 parents and 416 adolescents. Separate norms are provided for parents and adolescents.

Their factor analysis revealed two major factors with cohesion items loading on Factor One and adaptability items on Factor Two (Olson, Portner, & Bell, 1982).

Test-retest reliability on a sample of 124 university and high school students over a four week period was assessed on an earlier 50 item version of the scale. Pearson-product moment correlations were .84 for the total scale, .83 for cohesion and .80 for adaptability. Internal consistency on a sample of 2,412 respondents was high ($\alpha = .90$ for the total scale, $\alpha = .87$ for cohesion, $\alpha = .78$ for adaptability).

Dependent Variables

A total of 14 dependent variables which were of the greatest theoretical significance were derived from the two response class matrices. These 14 variables reflected adolescent behaviours, parent behaviours and mother-child interaction. The four dependent variables which reflected

adolescent behaviours were pain expression, on-task, off-task, and negative. The two parent behaviours, encourage coping and discourage coping, were also dependent variables. Finally, the mother-child interactions were reflected by the following eight dependent variables: pain expression-encourage; pain expression-discourage; on task-encourage; on task-discourage; off task-encourage; off task-discourage; negative-encourage; negative-discourage.

The thirteen clinical scales and the general maladjustment scale of the Personality Inventory for Children (PIC), provided an additional fourteen dependent variables. Finally, two dependent variables were derived from the Family Adaptability and Cohesion Evaluation Scale (FACES), cohesion and adaptability.

Therefore, there were a total of 30 dependent variables in the study.

CHAPTER 3

RESULTS

The results of this study will be presented in the following manner. First, the characteristics of the pain that the two groups experienced will be examined. This will be followed by an examination of the consistency of the subjects' behaviour over the two sessions. Then the statistical analyses related to the testing of the major hypotheses will be presented. This section will include the analyses of the observational data, the personality and the family questionnaires. Due to the multivariate nature of the design, the data were analyzed by Hotelling's T^2 . In addition, univariate analyses were calculated. Discriminant function analyses were also calculated in order to identify the variables which were the best indicators of group membership. These statistics are presented in the discriminant analysis section.

The SPSS and BMDP statistical packages were used for the statistical analyses.

Characteristics of Pain

The major concern of the study was with the differential mother-child interactions of coping and non-coping pain patients as well as personality and family characteristics. However, the characteristics of the pain

experienced by the adolescents may have been a confounding variable and thus may have explained the coping and non-coping behaviour of the two groups. For this reason, a number of factors were derived from the pain diary. For example, pain intensity was calculated by summing the intensity ratings over the one week period. A t -test indicated that there was no significant difference between the intensity of the pain experienced by the two groups, $t(18)=1.12$, n.s. The number of pain free days was also derived from the pain diary. A t -test indicated that there was no significant difference between the two groups on this factor, $t(18)=.19$, ns. There was no significant difference between the two groups on the final measure derived from the pain diary, peak intensity, $t(18)=1.20$, ns.

In addition, the duration of the pain experienced by the two groups was examined. That is, subjects were asked how long they had experienced their pain in years. A t -test indicated that there was no difference between the two groups on the variable of duration, $t(18)=.71$, ns.

A summary of the means and standard deviations of these variables is presented in Table 2.

Thus, hypothesis 1 is supported. Subjects in the two groups have had to deal with pain of similar intensity over the same length of time.

Table 2

Means, standard deviations and t-values for characteristic of pain variables over a one week period (n=10 per group)

Variable	Copers		Non-Copers		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
Intensity (sum)	13.70	12.28	22.00	19.89	1.12
Number of Pain Free Days	3.40	2.55	3.20	2.25	.19
Peak Intensity	2.80	1.48	3.60	1.51	1.20
Duration (years)	2.80	2.70	3.70	3.00	.71

Behavioural Variability over the Two Sessions

Subjects were required to participate in the exercise tasks over two sessions in an attempt to collect sufficient data about the mother-child interactions as many of the observed behaviours were of low frequency. In addition, the behaviour in the two sessions provided information about the consistency of the observed behaviours. The relevant dependent variables for this analysis were the four child behaviours and the two parent behaviours. A multivariate analysis of the 6 dependent variables was non-significant, $T^2=13.04$, $F(5,14)=2.06$, ns. Paired univariate t -tests of the observed child and parent behaviours over the two sessions are presented in Table 3. All of the 6 t -tests were found to be non-significant. The results suggest that the behaviour of both mothers and adolescents was consistent over the two sessions. The same analyses for the non-coping and coping groups considered separately yielded similar results, all non-significant (Appendix K). These non-significant results indicate that there was no significant variation in the behaviour of the subjects over the two sessions. For the purposes of the further analyses, the two sessions were considered as one. That is, all dependent variables were calculated by summing the data for each subject from the two sessions.

Table 3

Means, standard deviation and t-values of frequency of subjects' behaviour over two sessions (N=20)

Variable	Session 1		Session 2		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
<u>Child Behaviours</u>					
Pain Expression	2.70	4.03	1.60	2.48	1.38
On-Task	81.10	11.57	81.30	12.92	.13
Off-Task	3.35	6.74	5.45	10.47	1.86
Negative	2.85	3.77	1.65	3.21	1.29
<u>Parent Behaviours</u>					
Encourage Coping	1.45	1.96	1.10	1.55	.78
Discourage Coping	2.95	3.63	2.05	1.96	1.52

Hypothesis Testing

1) Observational Data

The variables from the response class matrix were divided into blocks of logically and theoretically related variables for statistical analysis. The statistical analysis of the observational data will thus be presented in three sections: child antecedent behaviour, parent antecedent behaviour, and child antecedent-parent consequent behaviour. Multivariate and univariate analyses will be presented for each block of variables. The univariate analyses are presented for both significant and non-significant multivariate analyses to provide the reader with information about the variables. However, in the case of a non-significant multivariate analysis, significant univariate analyses should be interpreted with extreme caution. For all of the univariate analyses, tests of the homogeneity of variance were calculated. If the test for homogeneity of variance was significant, univariate t-tests based on separate variance estimates are reported. If the test of homogeneity of variance was non-significant, a t-test based on a pooled variance estimate is reported.

Child Antecedent Behaviour

The multivariate analysis was calculated using three of the four dependent variables due to the linear dependence of the four child antecedent behaviour variables (Harris, 1975). The multivariate analysis of

the three dependent variables, (pain expression, on-task, and off-task) indicated an overall significant difference between the two groups, $T^2=12.17$, $F(3,16)=3.61$, $p<.05$.

Homogeneity of variance was examined by calculating F tests of the sample variances for the dependent variables. The results of the analyses indicated heterogeneity of variance for the samples on each of the four variables. (Table 4)

Due to the unequal variances, univariate t -tests based on separate variance estimates rather than pooled variance estimates were calculated. The univariate analyses of the four dependent variables showed three significant differences in child antecedent behaviour between the coping and non-coping groups. These analyses are summarized in Table 5. It was found that the non-coping subjects expressed significantly more pain, engaged in significantly more negative behaviour and were on-task significantly less time than were the coping subjects. However, there was no statistical difference between the two groups in the amount of time that they they were off task. The finding that non-coping subjects expressed significantly more pain and engaged in more negative behaviour than the coping subjects supports hypotheses 2 and 4. Hypothesis 3 was partially supported in that non-coping adolescents engaged in significantly less on-task behaviour than coping adolescents, but there was no statistical difference in off-task behaviour.

Table 4

F-tests of sample variances for child antecedent behaviours

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Pain Expression	1.59	49.98	31.25 ***
On-Task	81.90	812.25	9.93 **
Off-Task	76.74	470.46	6.13 *
Negative	1.88	39.69	21.12 ***

* $p < .05$
 ** $p < .01$
 *** $p < .001$

Table 5

Means, standard deviations and t-values of the frequency of child antecedent behaviours (n = 10 per group)

Variable	Copers		Non-copers		
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
Pain expression	1.60	1.26	7.00	7.07	2.38 *
On-Task	173.40	9.05	151.40	28.50	2.33 *
Off-Task	3.90	8.76	13.70	21.69	1.32
Negative	1.10	1.37	7.90	6.30	3.34 **

* $p < .05$

** $p < .01$

Parent Behaviour

A multivariate analysis of the two dependent variables indicated an overall significant difference between the groups on parent behaviour, $T^2=16.62$, $F(2,17)=7.85$, $p<.01$.

F-tests of the sample variances indicated unequal variances for the samples on the two dependent variables. These results are presented in Table 6.

Univariate t -tests based on separate variance estimates revealed significant group differences on one of the dependent variables, discourage coping. These analyses are summarized in Table 7. The results indicate that mothers of non-coping adolescents discouraged coping behaviour significantly more often than the mothers of coping adolescents. These results support hypothesis 5. In addition, the mothers of non-copers encouraged coping more frequently than the mothers of copers, although the statistical comparison did not reach significance at the .05 level ($t(11.5)=2.08$, $p<.10$). This finding was in direct contradiction to hypothesis 6.

Child Antecedent-Parent Consequent Behaviours

The analyses of child antecedent-parent consequent behaviours caused some concern as the values of these dependent variables were linked in that they depended on the occurrence of child antecedent behaviours. A number of difficulties arise with this type of dependent variable. For example, if absolute numbers from the inner

Table 6

F-tests of sample variances for parent antecedent behaviours

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Encourage Coping	1.80	12.60	7.06 **
Discourage Coping	1.82	28.09	15.30 ***

** $p < .01$
 *** $p < .001$

Table 7

Means, standard deviations and t-values of the frequency of parent antecedent behaviours (n = 10 per group)

Variable	Copers		Non-copers		<u>t</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Encourage coping	1.30	1.34	3.80	3.55	2.08
Discourage coping	1.50	1.35	8.50	5.30	4.05 **

** $p < .01$

cells of the response class matrix are used, one is in effect ignoring the fact that one group of subjects may have exhibited significantly more of a specific behaviour (e.g., pain expression). The use of percentages takes into account the occurrence of the child's behaviour but creates another difficulty. For example, a mother who encouraged pain expression five out of the ten times that her child expressed pain would be scored as 50% for pain expression-encourage. Another mother who encouraged pain expression once out of the one time that their child expressed pain would be scored as 100% for pain expression-encourage. Thus, it can be seen that the use of percentages can also distort the situation. Therefore these linked dependent variables were calculated and analyzed in both ways. The first analysis is of absolute values from the matrix cells and the second analysis is of the percentages.

Child Antecedent-Parent Consequent Behaviours:Absolute Values

A multivariate analysis was calculated on the eight child antecedent-parent consequent variables. Hotelling's T^2 showed a significant group difference on these eight variables, $T^2=51.95$, $F(8,11)=3.97$, $p<.05$.

Tests of the homogeneity of variance are summarized in Table 8. The results indicated homogeneity of variance on one of the dependent variables, on task-encourage. Heterogeneity of variance was indicated on seven of the dependent variables.

Table 8

F-tests of sample variances for child antecedent-parent
consequent behaviours - Absolute Values

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Pain expression- encourage	.10	8.47	84.44 ***
Pain expression- discourage	.10	.40	4.00 *
On task- encourage	2.02	3.57	1.77
On task- discourage	2.22	18.49	8.28 **
Off task- encourage	0.00	4.88	----
Off task- discourage	.18	1.66	9.31 **
Negative- encourage	.10	.98	9.89 **
Negative- discourage	.10	2.62	26.22 ***

* $p < .05$
 ** $p < .01$
 *** $p < .001$

The univariate analysis for the dependent variable, on task-encourage, is based on a pooled variance estimate. The t-tests based on separate variance estimates are reported for the other seven dependent variables. The univariate analyses revealed two significant dependent variables (Table 9). Mothers of non-coping subjects discouraged on-task behaviour and encouraged negative behaviour significantly more often than did mothers of coping subjects. The finding that the mothers of non-coping subjects discouraged on-task behaviour significantly more often than did the mothers of coping subjects supports hypothesis 8. Hypothesis 7 was about three variables, pain expression-encourage, off task-encourage, and negative-encourage. Although all of the three behaviours were in the expected direction, only one of the three was significantly different between the two groups. That is, mothers of non-copers encouraged negative behaviour significantly more often than mothers of copers but there was no statistical difference on the variables of pain expression-encourage and off task-encourage.

Child Antecedent-Parent Consequent Behaviours: Percentages

The values in the following analyses were percentages. That is, given a specific child behaviour, what percentage of the time did mothers respond in a specific way.

Hotelling's T^2 on the eight child antecedent-parent

Table 9

Means, standard deviations and t-values of the frequency of child antecedent-parent consequent behaviours - Absolute Values (n=10 per group)

Variable	Copers		Non-copers		<u>t</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Pain expression-encourage	.10	.32	2.00	2.91	2.06
Pain expression-discourage	.10	.32	.20	.63	.45
On task-encourage	1.30	1.42	1.70	1.89	.54
On task-discourage	1.30	1.49	4.50	4.30	2.22 *
Off task-encourage	0.00	0.00	1.00	2.21	1.43
Off task-discourage	.20	.42	.90	1.29	1.63
Negative-encourage	.10	.32	.90	.99	2.42 *
Negative-discourage	.10	.32	.80	1.62	1.34

* $p < .05$

consequent variables was non-significant, $T^2=28.98$, $F(8,11)=2.21$, ns.

F-tests for homogeneity of variance indicated unequal variances for the samples on three of the dependent variables, on task-encourage, on task-discourage and off task-encourage. Homogeneity of variance was indicated on the other five variables, (Table 10).

Univariate analyses were examined to compare to absolute value analyses. The t-tests based on separate variance estimates were calculated for the three dependent variables with unequal variances. All other calculated t-tests are based on pooled variance estimates. The results are summarized in Table 11. The variable, on task-discourage, was significantly different between the two groups, $t(11.1)=2.49$, $p<.05$. All other univariate analyses were non-significant. The finding that the mothers of non-copers discouraged on-task behaviour significantly more often than the mothers of copers supports hypothesis 8. Although all of the three behaviours in Hypothesis 7 were in the expected direction, there was no statistical difference on any of the three variables (pain expression-encourage, negative-encourage, and off task-encourage).

2) Questionnaires

Personality Inventory for Children

Hotelling's T^2 on the 14 dependent variables was non-significant, $T^2=208.55$, $F(14,5)=4.14$, ns.

Table 10

F-tests of sample variances for child antecedent-parent consequent behaviours - Percentages (n=10 per group)

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Pain expression-encourage	249.96	568.35	2.27
Pain expression-discourage	62.57	81.72	1.31
On task-encourage	.62	3.50	5.55 *
On task-discourage	.71	5.86	8.33 **
Off task-encourage	0.00	48.58	-----
Off task-discourage	20.61	40.20	1.95
Negative-encourage	62.57	231.65	3.71
Negative-discourage	110.88	88.92	1.25

* $p < .05$

** $p < .01$

Table 11

Means, standard deviations and t-values of the frequency
of child antecedent-parent consequent behaviours -
Percentages (n=10 per group)

Variable	Copers		Non-copers		<u>t</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Pain expression- encourage	5.00	15.81	17.28	23.84	1.36
Pain expression- discourage	2.50	7.91	2.86	9.04	.09
On task- encourage	.80	.79	1.35	1.87	.86
On task- discourage	.79	.84	2.80	2.42	2.49 *
Off task- encourage	0.00	0.00	3.93	6.97	1.78
Off task- discourage	1.79	4.54	3.47	6.34	.68
Negative- encourage	2.50	7.91	11.42	15.22	1.64
Negative- discourage	3.33	10.53	5.22	9.43	.42

* $p < .05$

F-tests of sample variances indicated that there was homogeneity of variance on all of the dependent variables, with the exception of the Family Relations Scale. These results are presented in Table 12.

The univariate analyses are therefore based on pooled variance estimates, with the exception of the analysis of the Family Relations Scale, which was based on a separate variance estimate. Univariate analyses revealed one significant result on the achievement scale, $t(18)=2.39$, $p<.05$. Results indicated that subjects in the non-coping group had significantly higher scores on this scale as compared to the coping group. However, the mean achievement score for the non-coping group was not at a level which would be interpreted as suggesting difficulty in school achievement for that group (i.e., $T>60$). The hypothesis that non-coping adolescents would be perceived as being less well adjusted and as having more somatic concern than the coping adolescents was not supported. Table 13 presents a summary of the analyses for the PIC.

Family Adaptability and Cohesion Evaluation Scale

There was no significant difference between the groups on the two dependent variables, $T^2=3.52$, $F(2,16)=1.66$, ns.

Homogeneity of variance was indicated on both of the dependent variables. (Table 14)

Univariate analyses based on pooled variance estimates were non-significant. These analyses are

Table 12

F-tests of sample variances for the PIC

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Defensiveness	79.39	105.47	1.33
Adjustment	90.25	255.68	2.83
Achievement	30.14	111.72	3.71
Intellectual Screening	110.04	44.36	2.48
Development	36.00	111.51	3.10
Somatic Concern	181.98	166.15	1.10
Depression	98.01	123.65	1.26
Family Relations	13.76	111.09	8.09 **
Delinquency	70.06	192.10	2.74
Withdrawal	184.69	196.56	1.06
Anxiety	102.41	116.64	1.14
Psychosis	161.54	201.64	1.25
Hyperactivity	165.12	112.15	1.47
Social Skills	170.04	93.90	1.81

** $p < .01$

Table 13

Means, standard deviations and t-values for PIC variables
(n=10 per group)

Variable	Copers		Non-copers		t
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Defensiveness	52.70	8.91	46.20	10.27	1.51
Adjustment	56.90	9.50	65.70	15.99	1.50
Achievement	42.90	5.49	51.90	10.57	2.39 *
Intellectual Screening	49.80	10.49	41.80	6.66	2.04
Development	44.70	6.00	49.60	10.56	1.28
Somatic Concern	61.60	13.49	65.90	12.89	.73
Depression	57.20	9.90	61.00	11.12	.81
Family Relations	48.80	3.71	53.00	10.54	1.19
Delinquency	59.10	8.37	58.90	13.86	.04
Withdrawal	56.80	13.59	60.70	14.02	.63
Anxiety	52.30	10.12	57.90	10.80	1.20
Psychosis	60.30	12.71	62.20	14.20	.32
Hyperactivity	48.20	12.85	43.70	10.59	.85
Social Skills	52.20	13.04	54.50	9.69	.45

* $p < .05$

Table 14

F-tests of sample variances for FACES

Variable	Copers	Non-copers	<u>F</u>
	<u>s</u> ²	<u>s</u> ²	
Cohesion	177.69	104.24	1.70
Adaptability	76.39	58.52	1.31

summarized in Table 15. Although, the variable cohesion was in the expected direction, there were no statistical differences between the two groups on either of the two variables from the family scale. Therefore, the hypothesis that non-coping adolescents would perceive their family as being more enmeshed and more rigid than coping adolescents was not supported.

Discriminant Analyses

A number of stepwise discriminant function analyses were conducted in order to identify the variables most predictive of group membership. Due to the small sample size, an analysis of all variables at once was not possible. As a result, discriminant analyses were calculated on the same blocks of variables as the multivariate analyses. Following this, the variables which were the best indicators of group membership, that is, the most powerful variables from each block (i.e., negative, discourage coping, and on task-discourage) were combined in a final discriminant function analysis.

A word of caution is warranted about the results of the following discriminant analyses. Adams (1979) has suggested that the absolute minimum subject-to-variable ratio for exploratory purposes is 3-to-1. Replicable results are most likely to be acquired when the ratio is 10-to-1. In the majority of the following analyses, the minimum 3-to-1 ratio is maintained. However, in the analysis of the PIC variables and the child antecedent-

Table 15

Means, standard deviations and t-values for FACES
(n=10 per group)

Variable	Copers		Non-copers		<u>t</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	
Cohesion	50.50	13.33	60.56	10.21	1.83
Adaptability	42.30	8.74	46.33	7.65	1.06

parent consequent variables, the ratio is lower than the minimum. Adams (1979) states that results of analyses in which the number of subjects and variables are approximately equal will likely show a very high classification rate that is extremely unstable.

Due to the fact that the subject-to-variable ratio is the minimum in the following analyses, the statistical barrier for entry into the discriminant function was raised above the normal default level. That is, the F to enter, which is a test of the significance of Wilks' Lambda, was set at 4.4. This level of F is significant at an alpha level of .05.

Child Antecedent Behaviour

The degree of overlap between the two groups on the four child antecedent variables is illustrated in Figures 1 and 2. As shown in these figures, there is considerable overlap between the two groups on both the off-task and on-task behaviour variables. The degree of overlap is less on the variables pain expression and negative behaviour, and there is a clear separation between six of the non-coping adolescents and the other subjects.

An analysis of these four variables, (i.e., pain expression, on-task, off-task, negative), produced a discriminant function with only one variable, negative, which was a measure of negative behaviour from the child. Eighty percent of the subjects (100% copers, 60% non-copers) were classified correctly with this one variable,

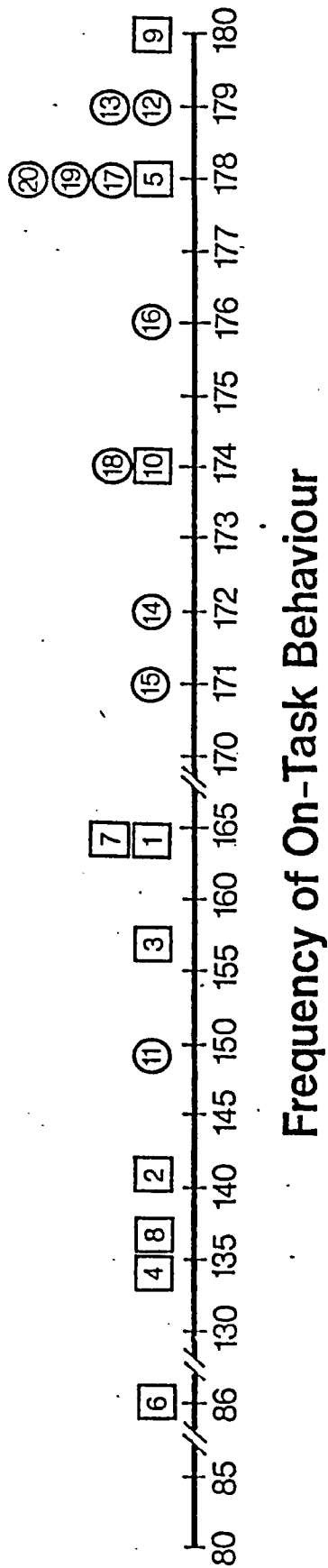
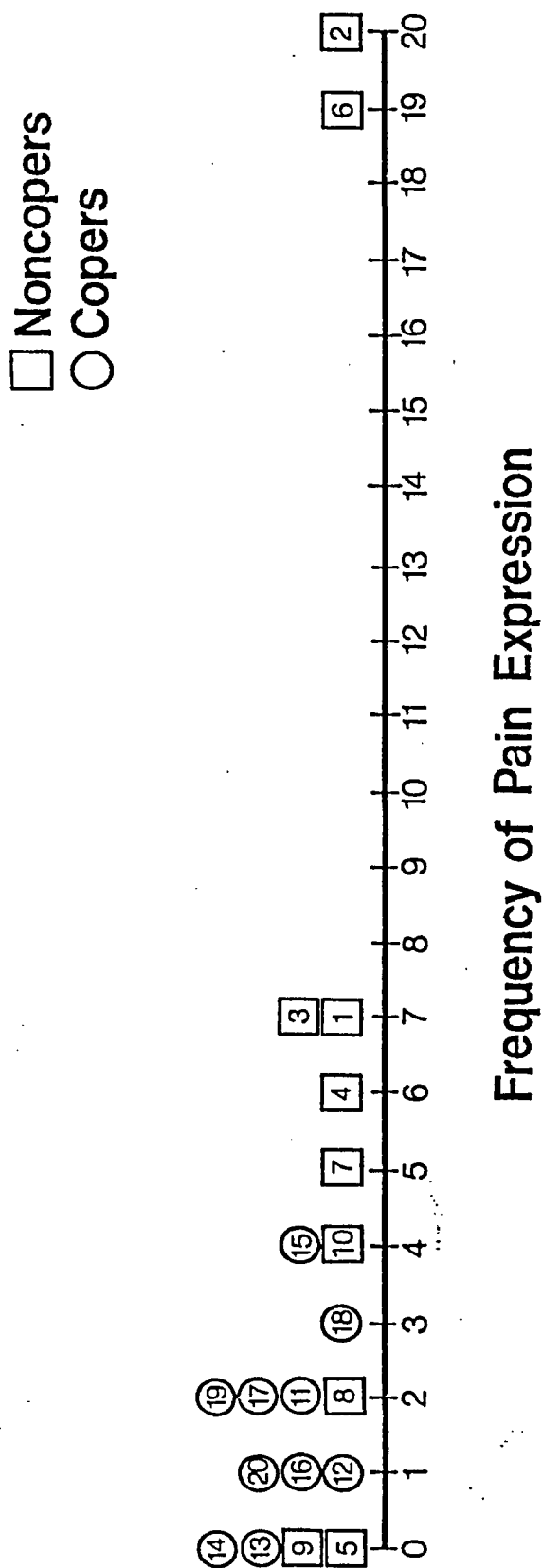
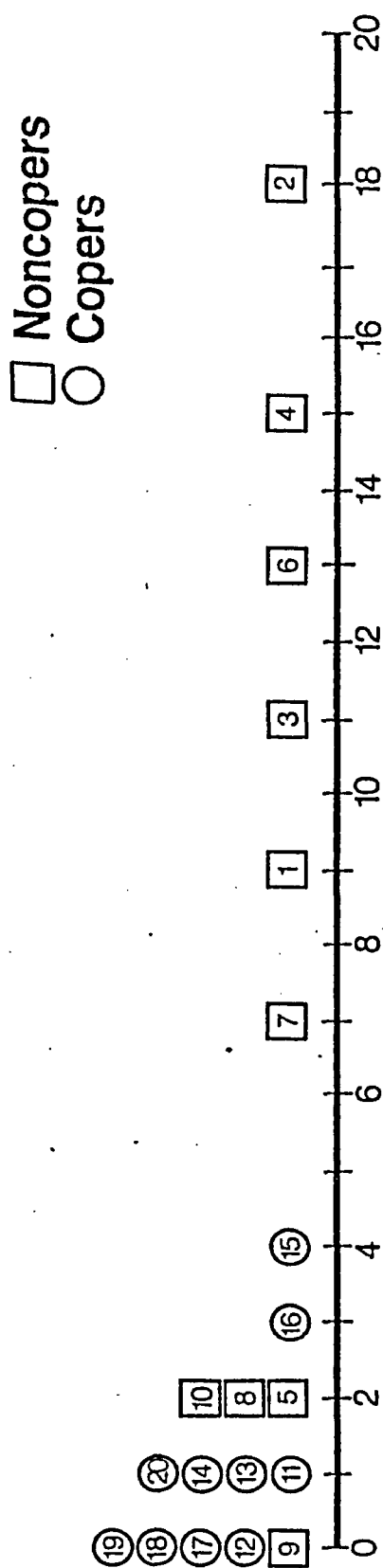
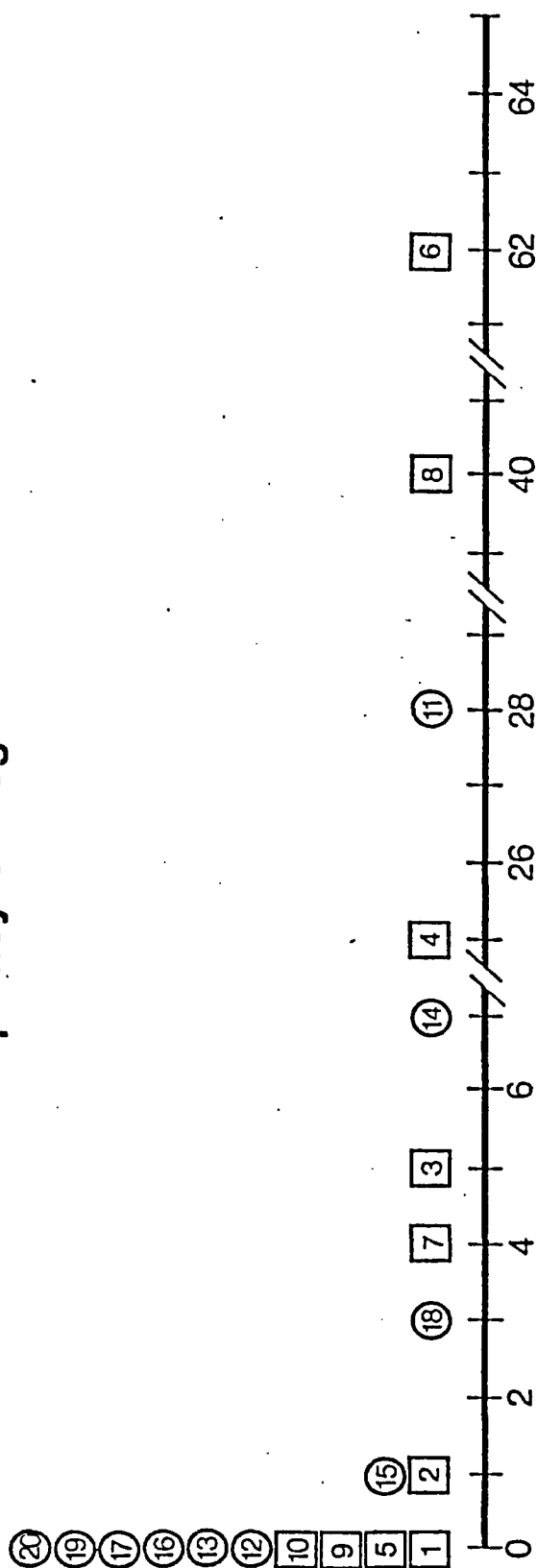


Figure 1: Distribution of responses of coping and non-coping subjects



Frequency of Negative Behaviour



Frequency of Off Task Behaviour

Figure 2: Distribution of responses of coping and non-coping subjects

Wilks' $\lambda = .6179$, $F(1,18)=11.13$, $p<.01$. The results of this discriminant function analysis indicate that negative behaviour from the child is the best indicator of group membership as compared to the other child behaviours (i.e., on-task, off-task, pain expression). These results are summarized in Table 16.

Parent Behaviour

In an attempt to determine which parent behaviour best discriminated between copers and non-copers, the two variables which measured parent antecedent behaviour, (i.e., encourage coping, discourage coping), were included in a discriminant function analysis. Figure 3 illustrates that there is a clear separation of seven of the non-copers on the discourage coping variable. The behaviour of four of the non-copers was distinct from the copers on the encourage coping variable.

The results of the discriminant analysis are presented in Table 16. Again, the analysis resulted in a discriminant function with only one variable, discourage coping, Wilks' $\lambda = .5233$, $F(1,18)=16.39$, $p<.001$. This discriminant function classified 85% of the subjects (100% copers, 70% non-copers) correctly. Therefore, in terms of parent behaviour, discourage coping is the best predictor of group membership.

Child Antecedent-Parent Consequent Behaviour:Absolute

An inspection of Figures 4, 5, 6, and 7 shows the

Table 16

Stepwise Discriminant Analysis

Variables Added to the Equation	Wilks' λ	Approx. F*	df	% Correct Classification	
				Copers	Non-copers Total
<u>1) Child Behaviours:</u>					
Step 1: Negative	.6179	11.13	1, 18	100%	60% 80%
<u>2) Parent Behaviours:</u>					
Step 1: Discourage coping:	.5233	16.39	1, 18	100%	70% 85%
<u>3) Child antecedent- parent consequent behaviours (Absolute):</u>					
Step 1: Negative- encourage:	.7538	5.88	1, 18		
Step 2: On task- discourage:	.5123	8.09	2, 17		
Step 3: Off task- discourage:	.3681	9.16	3, 16	100%	80% 90%

Table 16 (continued)

Variables Added to the Equation	Wilks' λ	Approx. F*	df	% Correct Classification	
				Copers	Non-copers
Total					
4) <u>Child antecedent-</u> <u>parent consequent</u> <u>behaviours (%)</u> :					
Step 1: On task- discourage:	.7445	6.18	1,18		
Step 2: Pain expression encourage:	.6015	5.63	2,17		
Step 3: Off task- encourage:	.5042	5.24	3,16	90%	80%
5) <u>Combination of</u> <u>variables</u> :					
Step 1: Discourage coping:	.5109	16.48	1,18	100%	85%

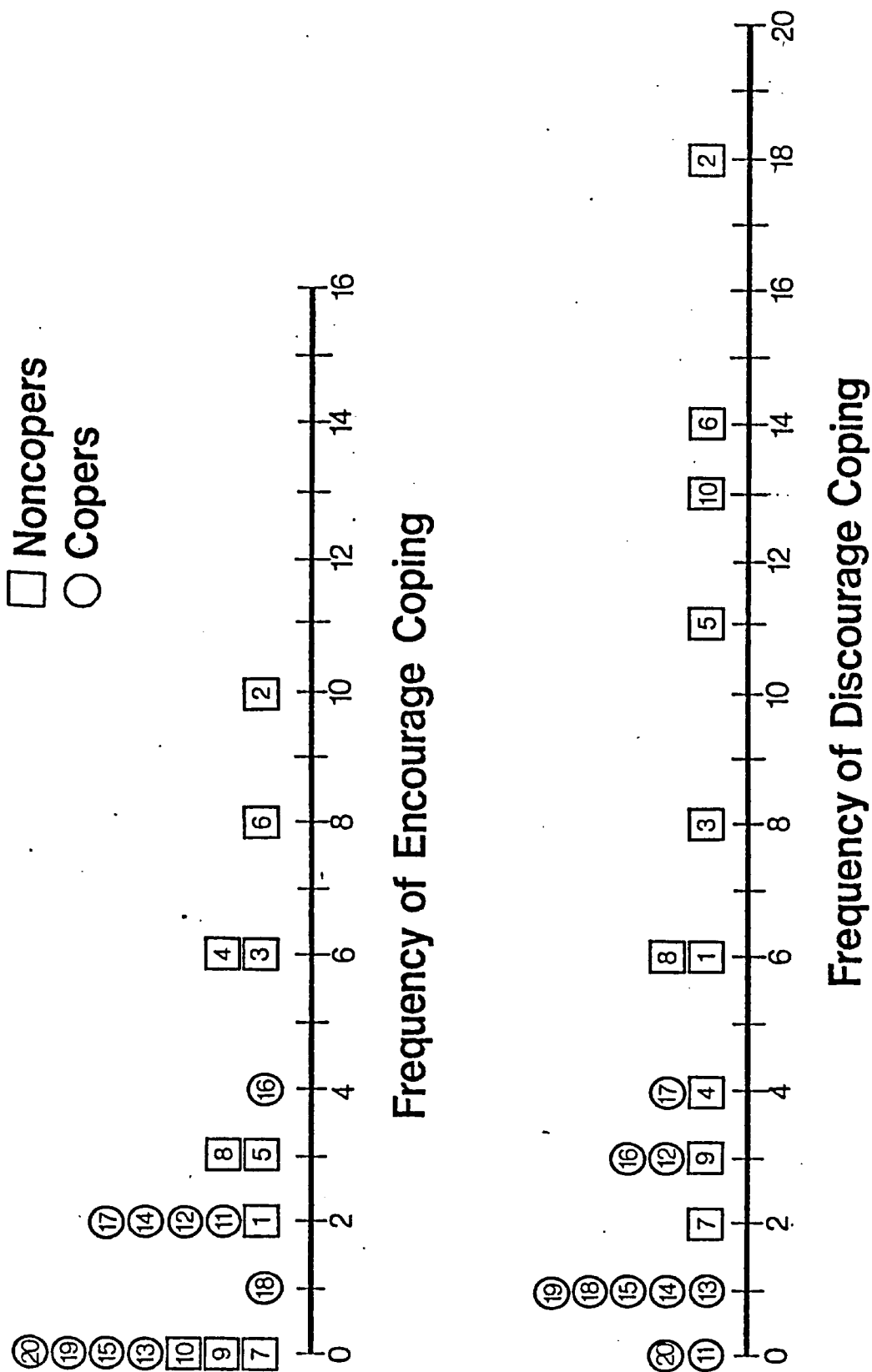


Figure 3: Distribution of responses of the mothers of coping and non-coping subjects

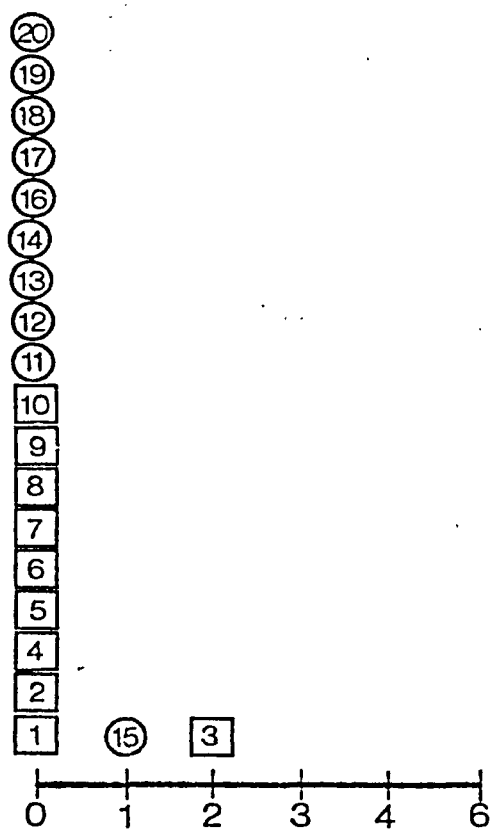
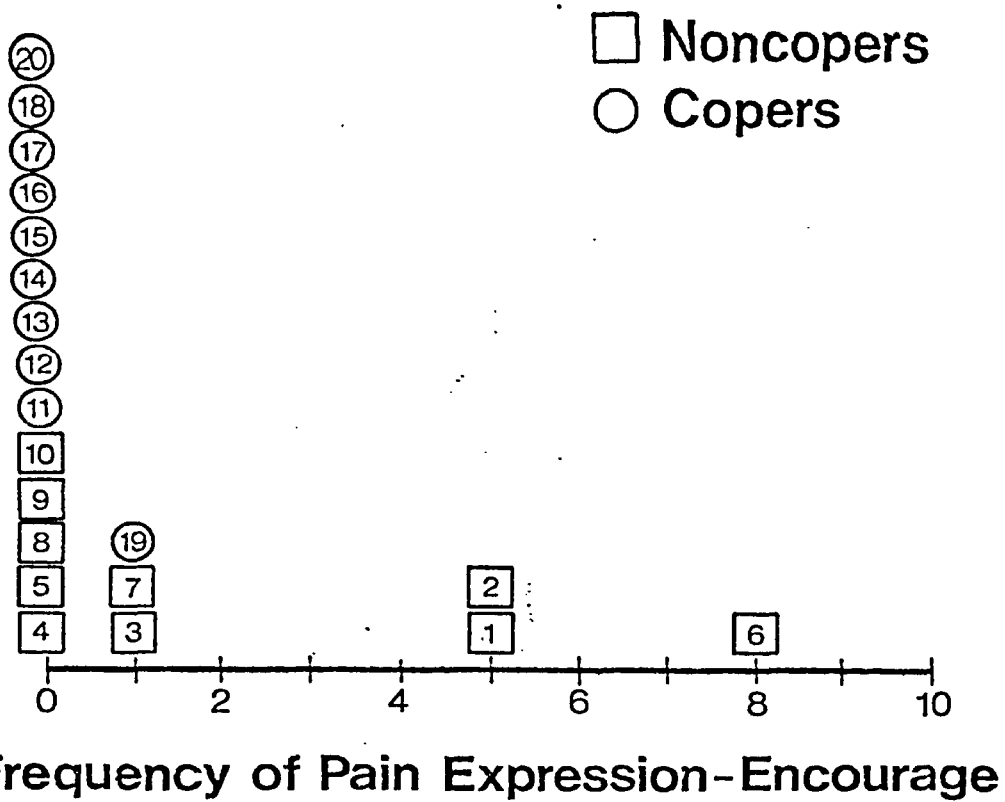
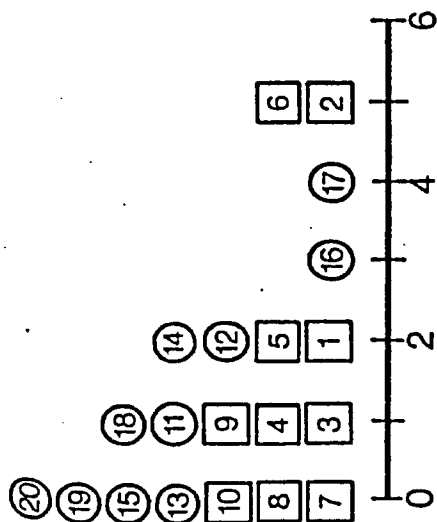
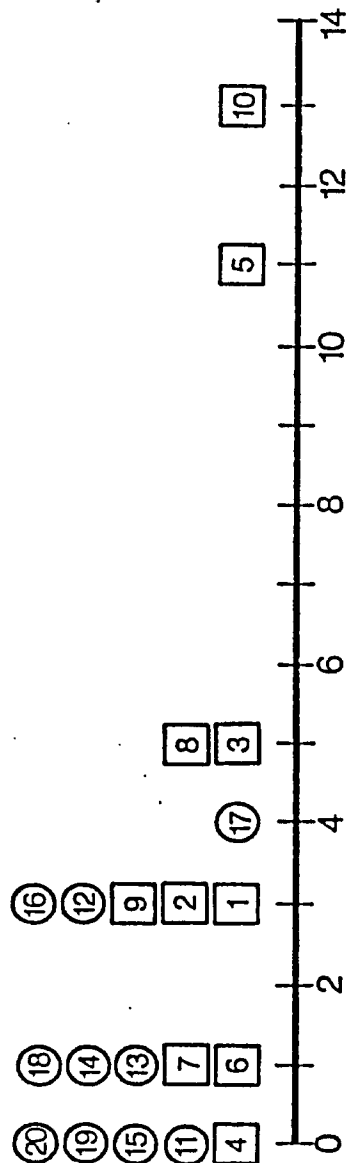


Figure 4: Distribution of mother-child interaction responses

☐ Noncopers
☐ Copers



Frequency of On Task-Encourage



Frequency of On Task-Discourage

Figure 5: Distribution of mother-child interaction responses

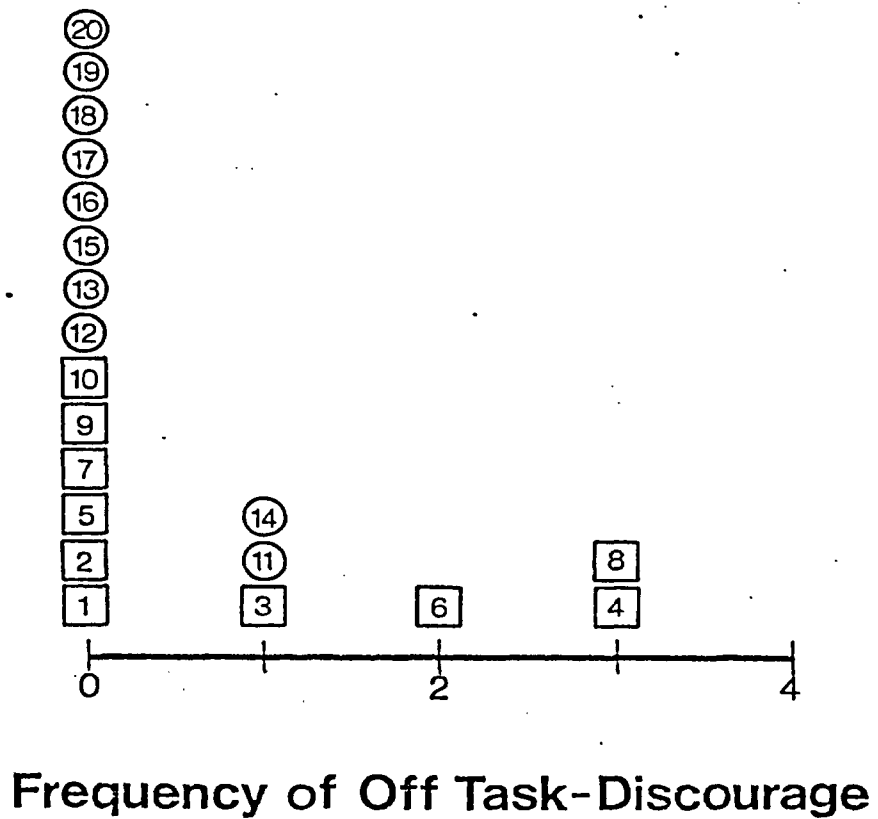
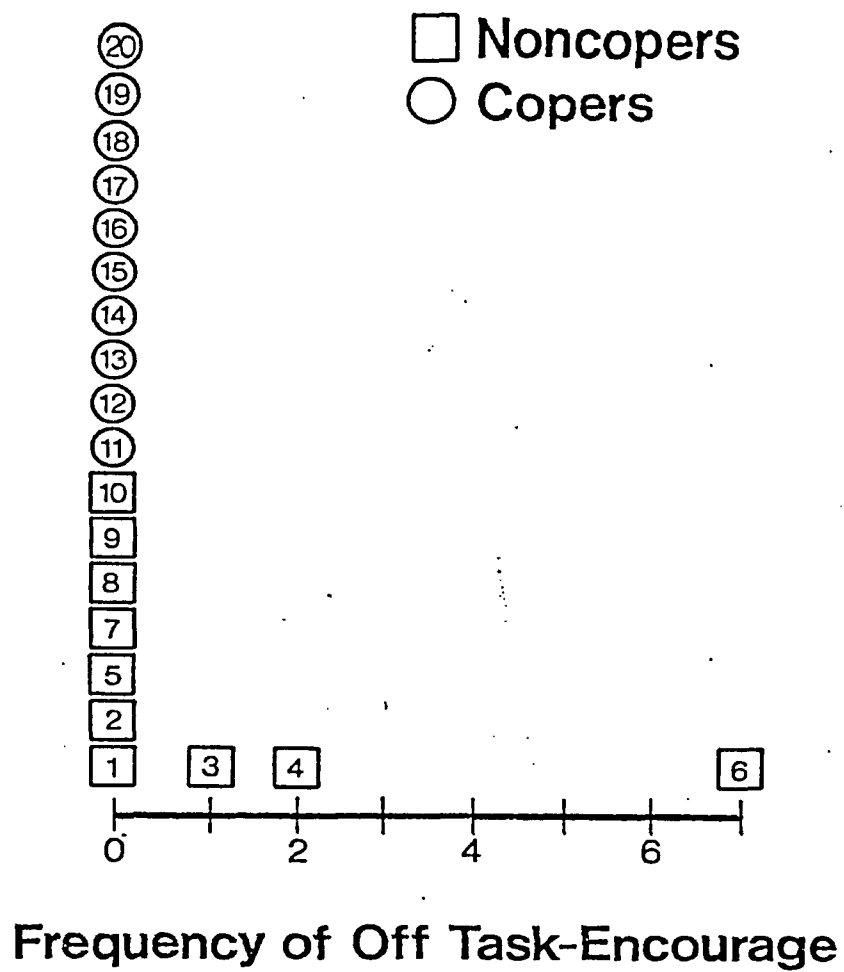


Figure 6: Distribution of mother-child interaction responses

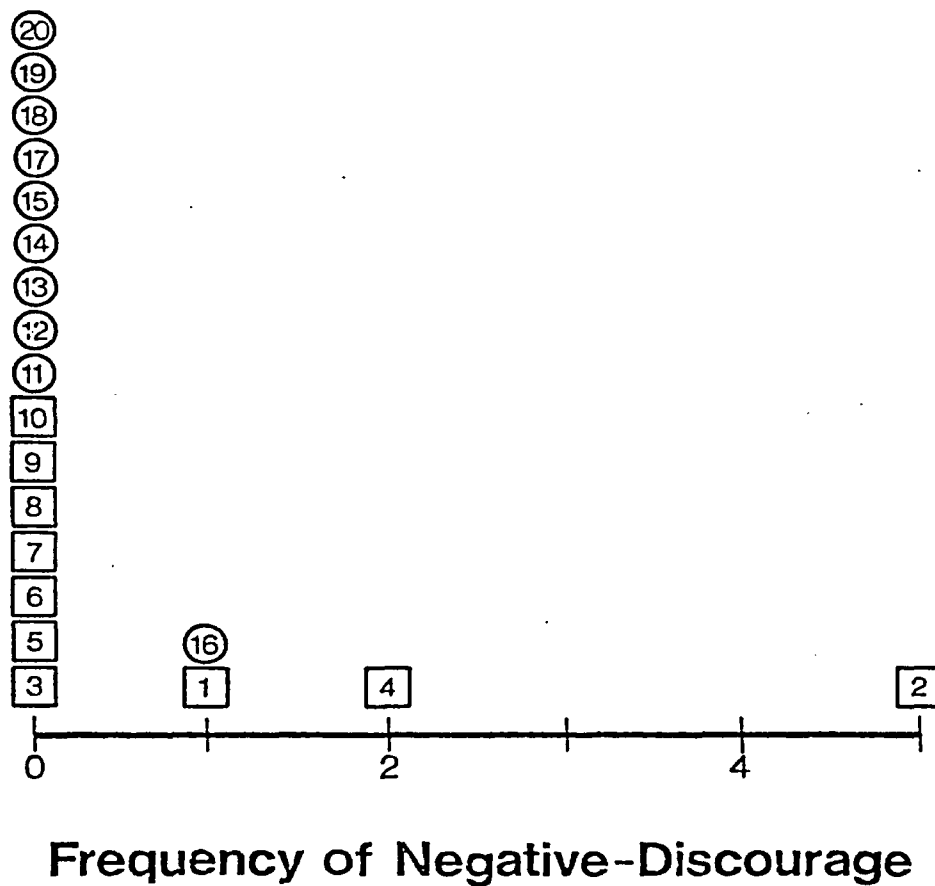
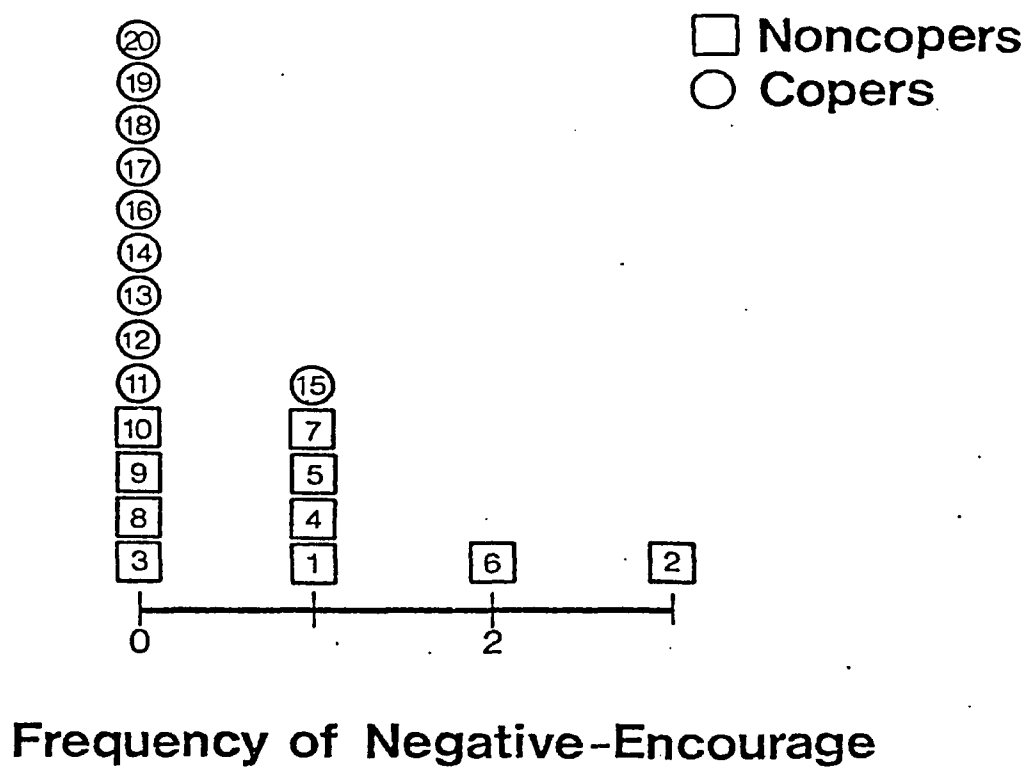


Figure 7: Distribution of mother-child interaction responses

degree of overlap between the two groups on the eight child antecedent-parent consequent variables. As shown in these figures, there is considerable overlap between the two groups on all of the eight variables. The best separation of the groups occurs on the on task-discourage variable, in which four of the non-copers can be distinguished from the copers.

These eight variables (i.e., pain expression-encourage, pain expression-discourage, on-task-encourage, on-task-discourage, off task-encourage, off task-discourage, negative-encourage, negative-discourage) were also included in a discriminant function analysis. A discriminant function with three variables was produced (negative-encourage, on task-discourage, off task-discourage). Correct classification of 90% of the subjects (100% copers, 80% non-copers) was possible with this function, Wilks' $\lambda = .3680$, $F(3,16)=9.16$, $p<.001$. These results are presented in Table 16.

Child Antecedent-Parent Consequent Behaviour:Percentages

An analysis of the eight percentage variables produced a discriminant function with three variables, on task-discourage, pain expression-encourage and off task-encourage, Wilks' $\lambda = .5042$, $F(3,16)=5.24$, $p<.01$). Correct classification of 80% of the subjects (90% copers, 70% non-copers) was possible with this function. These results are summarized in Table 16.

Personality Inventory for Children

Twelve variables from the PIC (i.e., defensiveness, adjustment, development, somatic concern, depression, family relations, delinquency, withdrawal, anxiety, psychosis, hyperactivity, social skills) were included in a discriminant function analysis. The Achievement and Intellectual Screening scales were not included in the analysis because of their theoretical relationship to the criteria which differentiated between the two groups (i.e., school absence). The results of the analysis indicated that none of the twelve variables discriminated between the two groups.

Family Adaptability and Cohesion Evaluation Scale

A discriminant function analysis which included the two variables derived from FACES (i.e., adaptability, cohesion) was also calculated. The results indicated that neither of the two variables discriminated between the two groups.

Combination Discriminant Analysis

A final discriminant analysis which included the best indicators of group membership from the previous analyses was calculated. The one variable that was a significant discriminator in both the discriminant analyses of the absolute and percentage values of the child antecedent-parent consequent behaviour analyses was included in the final discriminant analysis (i.e., on task-discouragement).

Thus, the three variables referred to as negative behaviour, discourage coping, and on task-discourage were included in the analysis. A discriminant function with one variable was produced, discourage coping. The results are summarized in Table 16. Correct classification of 85% of the subjects (100% copers, 70% non-copers) was possible with this function, Wilks' $\lambda = .5109$, $F(1,18)=16.48$, $p<.001$. Therefore, in terms of all the variables, the parent antecedent behaviour referred to as discourage coping was the best indicator of group membership.

CHAPTER 4

DISCUSSION

The principal purpose of this study was to investigate differences in mother-child interactions, child personality and family characteristics between adolescents who were coping with chronic benign intractable pain and adolescents who were not coping well. Discussion of the results will initially address the characteristics of the pain experienced by the two groups. The discussion will then focus on the observed behavioural differences between non-coping and coping adolescents, their mothers, and the differential mother-child interaction. In addition, the personality and family characteristics of both groups will be discussed, followed by a discussion of the discriminant analyses. Finally, implications for treatment and recommendations for future research will be presented.

Characteristics of Pain

The hypothesis that there would be no differences between the non-coping and coping subjects on the length of time that they had suffered from pain or the three dimensions derived from the pain diary (i.e., mean intensity, peak intensity, number of pain free days) was supported. There were no statistical differences between the two groups on any of these four variables. Although, the mean intensity reported by non-copers ($M=22.00$,

SD=19.89) was higher than that reported by copers (M=13.70, SD=12.28), this difference failed to reach commonly accepted levels of statistical significance. This non-significant result may be due to the extreme variation in the intensity of pain reported by both of the groups.

These results indicate that neither the intensity of the pain nor the length of time that an adolescent had suffered from the pain were helpful in the determination of whether an adolescent was coping or not coping with his/her pain. The statistical findings support previous speculation that the pain experienced by non-coping and coping pain patients is similar in intensity (Sternbach, 1974; Turk, Meichenbaum & Genest, 1983).

Observed Behavioural Differences

The observational coding system which was adapted from Mash and Terdal's (1981) response class matrix was found to have adequate reliability and was used successfully with adolescents who have pain. In addition, the response class matrices were successfully adapted for use in structured exercise tasks. Five of the fourteen variables that were derived from the matrices significantly differentiated between the coping and non-coping subjects. The following sections provide a more detailed discussion of the observed behavioural differences between the two groups.

Adolescent Behaviour

The general expectation that non-coping adolescents would react differently than coping adolescents when placed in a pain-oriented situation was clearly supported. All of the four child behaviours were found to be in the expected direction. The behaviour of the two groups was statistically different on three of the four child behaviours. That is, non-coping adolescents expressed significantly more pain, engaged in more negative behaviour and were on-task significantly less often as compared to coping adolescents. In addition, the non-coping subjects were observed to be off-task more often than the coping subjects, although this difference failed to reach statistical significance. The extreme variation in the amount of time that the non-copers were off-task may explain this non-significant result.

There were clear behavioural differences in the behaviour of adolescents depending on whether or not they were coping with their chronic pain. Coping subjects tended to complete the majority of the exercises with few expressions of pain and few expressions of anger, refusal, or discouragement (i.e., negative behaviour). In contrast, non-coping subjects tended to complain of pain, engage in negative behaviour, and fail to complete the exercise tasks. In general, the observations in the study suggest that non-coping adolescents are individuals who are likely to give up and verbally complain about pain and

the task when they are placed in a pain-oriented situation.

These findings support Fordyce's contention (1976) that chronic pain patients (i.e., the non-copers) exhibit behaviours that signify that they are experiencing pain to those around them. For example, in this study, verbalizations of pain, negative behaviour and a lower level of activity can be regarded as pain behaviours which effectively communicate the experience of pain. Previous research with adult chronic pain patients has also lent support to Fordyce's model. For example, Keefe & Block (1982) observed non-coping back pain patients during activity. Results indicated that the frequency of behaviours such as guarded movement and grimacing were correlated with patient's ratings of pain and tended to decrease in frequency with treatment. In addition, pain behaviours were exhibited by the low back pain patients at a higher rate than by normal or depressed controls.

Parent Behaviour

The behaviour of the mothers during the interaction task was found to be different depending on whether or not their child was a child who coped. Specifically, the hypothesis that the mothers of non-copers would discourage their child's coping behaviour significantly more often than the mothers of copers was clearly supported. Similarly, the most striking difference in mother-child interaction between coping and non-coping subjects was the

finding that mothers of non-copers discouraged on-task behaviour significantly more often than did mothers of copers. This finding was consistent across the calculation of absolute and percentage values and suggests that when the non-coping adolescent is working on exercises, their mother is likely to discourage them from continuing. Comments such as "Doesn't it hurt?" or "Don't overdo it" were noted by the observers to be an effective means of discouraging further attempts to complete the exercise tasks.

These findings suggest the possibility that mothers of non-coping adolescents tend to be overprotective when their child is placed in a pain-oriented situation. The mothers' attempts to discourage their child's coping and on-task behaviour may be regarded as a general concern about the possibility of increased pain if their child overextends him/herself physically. Although, the results suggest that the mothers of non-copers are more likely to overprotect their children than the mothers of copers, it is not possible to determine whether this type of behaviour is the cause or the result of their child's non-coping behaviour. That is, there are two possible scenarios for the resulting mother-child interaction. One is that the mother tends to overprotect her child and as a result the adolescent learns to be cautious and in effect, to not cope with his/her pain. The other possibility is that the adolescent does not cope well with his/her pain and as a result the mother begins to overprotect the

child. Which of these two scenarios is correct is unclear from the results of this study.

Regardless of which behaviour is the cause and which is the effect, these findings lend general support to Fordyce's model which indicates that pain behaviours are susceptible to instrumental conditioning. That is, if a chronic pain patient receives desirable consequences as a result of pain behaviours, the likelihood is that the incidence of pain behaviours will increase. The results of the present study suggest that non-coping adolescents are the objects of more expressions of concern from their mothers, as compared to coping subjects. This type of message may serve to reinforce pain behaviours and the continuation of non-coping behaviour. Although these results do not demonstrate a causal relationship between mother-child interaction and coping, the data are consistent with clinical impressions that parental behaviour may influence child coping.

Interestingly, mothers of non-coping subjects were also found to be more likely to encourage coping behaviour as compared to the mothers of coping subjects, although this difference was not significant. This finding was the opposite of what was anticipated and suggests that mothers of non-copers tend to both encourage and discourage coping behaviour more often than mothers of copers. Similarly, although there were no statistical differences in mother-child interaction between the two groups, except on the

on task-discourage variable, it is interesting to note that mothers of non-copers exhibited more of the specified behaviour on all of the eight variables as compared to mothers of copers. That is, they tended to both encourage and discourage their child's expressions of pain, on-task, off-task, and negative behaviour more frequently than did mothers of coping subjects.

These findings suggest that, in general, mothers of non-copers tend to be more actively involved or perhaps more intrusive with their child when he/she is placed in a pain-oriented situation. The possibility exists that the result of this overinvolvement is that the non-coping adolescents receive contradictory messages from their mothers. That is, at different times they are both encouraged to and discouraged from engaging in a specific behaviour. Perhaps, the mothers of non-copers vacillate between encouraging and discouraging their child's behaviour because they themselves are torn between their tendency to sympathize with their child and their tendency to encourage their child to try a little harder on a task.

In conclusion, mothers of non-copers were found to discourage their child's coping and on-task behaviour significantly more often than the mothers of copers. In addition, mothers of non-copers tended to be more actively involved or intrude more in their child's behaviour. These findings lend general support to Minuchin's (1974) theory that the families of patients with non-organic pain can be described as enmeshed and overprotective. One

question is whether or not these are task-specific or general characteristics of the mothers of non-copers. Previous research has indicated that intrusiveness was not a trait or general characteristic of the mothers of reading problem boys but rather was a behaviour characteristic of them in specific situations (McDermott, 1977). That is, when placed in identical situations, the mothers were found to be intrusive with their reading problem sons but not with their normally achieving sons. Whether the mothers of non-copers are overprotective and intrusive only in pain-oriented situations is an important question for future research.

Questionnaires

Personality Inventory for Children

The hypothesis that non-coping and coping subjects would differ on measures of psychological adjustment (Adjustment scale) and concern with physical symptoms (Somatic Concern scale) on the Personality Inventory for Children was not supported. Although, the non-copers received higher scores on ten of the fourteen scales, a statistically significant difference was indicated on only one of the scales, Achievement. This scale is a measure of below average academic achievement in spite of adequate intellectual capacity. The difference between the two groups on the Achievement scale may be a function of the scale's theoretical relationship to the criteria which

differentiated between the groups (i.e. school absence). Although there was a statistical difference between the two groups, the mean achievement score for the non-coping group was not at a level which would be interpreted as indicating difficulty in school achievement, (i.e., $T > 60$, Lachar & Gdowski, 1979). In fact, none of the mean scores on the 16 scales for either of the two groups were at a level which would generally be interpreted as being indicative of pathology, (i.e., $T > 70$).

Therefore, the mothers of coping and non-coping adolescents tended not to express a significant amount of concern about their child's behaviour across a variety of different dimensions (i.e., academic, social skills, somatic concern, etc.). It is interesting to note that although the non-copers were missing a considerable amount of school because of pain, their mothers did not perceive them as being generally less well adjusted or less able to cope across a number of different life situations. It is possible that the mothers of non-copers reacted to the fact that they were participating in a research study conducted by a psychology department by denying problems and generally describing their children in a favourable light. However, their scores on the defensiveness scale of the PIC, which is a measure of the tendency to be defensive about a child during an evaluation, did not indicate that this was true. In fact, the coping subjects received a higher score on the defensiveness scale than did the non-copers, although this difference did not reach

statistical significance.

The personality profiles of the non-coping subjects whose behaviour was the most aberrant during the pain-oriented task were not found to be deviant from the other non-coping subjects. Therefore, there was no evidence that the most aberrant non-copers were any more personality disordered, as measured by the PIC, than non-copers whose behaviour during the pain-oriented task was more similar to that of coping subjects.

Family Adaptability and Cohesion Evaluation Scale

The hypothesis of differences between the two groups on the Family Adaptability and Cohesion Evaluation Scale was not supported. There were no statistical differences between groups on the adaptability and cohesion dimensions of this scale. However, non-coping subjects did tend to score in the predicted direction, that is, more highly, on the cohesion scale. Therefore, coping and non-coping subjects tended to have similar perceptions about the degree of involvement between their family members and the ability of their family system to adapt to change.

These findings indicate that non-coping adolescents do not perceive their families as being more enmeshed or more rigid than other families. These results do not support Minuchin's (1974) contention that the families of patients with non-organic pain can be described as enmeshed, overprotective and rigid. However, the

behavioural observations during the interaction tasks did suggest that mothers of non-copers tended to be overly involved and overprotect their child. It may be that this type of maternal behaviour is specific to pain-oriented tasks and is therefore not perceived by the adolescent as being a general characteristic of their family relationships. The other possibility is that it is only the mothers within the families of non-coping adolescents who are overprotective and as a result this is not perceived by the adolescent as being a general family characteristic.

Discrimination of Groups

The one factor which was the best indicator of group membership was the parent behaviour referred to as discourage coping. Successful classification of 100% of copers and 70% of non-copers was possible with this one variable. Classification was not improved by the addition of other variables or combination of variables. As mentioned previously, these results should be interpreted with caution due to the low subject-to-variable ratio (Adams, 1979).

The finding that there is always some overlap between the two groups, coupled with findings of extreme variation within the non-coping group, suggests that non-copers may not be a homogeneous population. That is, there may be subgroups of non-coping adolescents who miss school for a variety of reasons over and above the fact that they have

chronic benign intractable pain. The sample size in the present study, as well as the lack of discriminatory assessment techniques, did not enable the author to divide non-copers into subgroups. However, it was apparent that while coping subjects behaved in a relatively consistent manner, the behaviour of non-coping subjects was quite variable.

The mother-child interaction of some non-copers was consistent with Fordyce's operant model of pain behaviours. However, the mother-child interaction of other non-coping subjects resembled that of the coping subjects, except that the non-coping subjects appeared to be much more tense during the tasks. Therefore, there may be at least two subgroups of non-coping adolescents: an operant conditioned group (i.e, pain behaviours are reinforced by significant others) and a group which has stress related pain (i.e., the pain is a result of stress).

Recently, there has been some mention of distinct subgroups of non-coping adult chronic pain patients. For example, a few studies have identified subgroups of pain patients based on MMPI profiles (Armentrout, Moore, Parker, Hewett & Feltz, 1983; Bradley, Prokop, Margolis, & Gentry, 1978). In addition, Keefe (1983) described four pain management protocols which were being used for different groups of adult non-coping chronic pain patients: operant conditioning protocol, muscle reeducation protocol, psychophysiologic protocol and the

applied relaxation protocol. The development of assessment methods which differentiate between valid subgroups of non-copers is an important step if effective treatments are to be found for non-coping adolescents.

Limitations of the Study

One weakness of the present study is that the influence of the laboratory setting is unknown. As mentioned previously, studies which have compared an individual's behaviour in a laboratory and home setting have yielded conflicting results. It is possible that the subjects altered their behaviour to fit their notion of expectations for their behaviour. However, the subjects' behaviour was found to be consistent over two sessions. In addition, the fact that there were observed behavioural differences between the two groups suggests that subjects did not alter their behaviour. Despite this weakness, the results suggest that laboratory tasks may be used effectively to study social interactions related to coping with pain.

Implications for Treatment

The results of the present study lead to several treatment implications. The finding of differential mother-child interaction between coping and non-coping groups suggests that treatment of only the adolescent would not be productive. Rather, family therapy would be the treatment of choice.

The results of the study suggest that parent-child interaction patterns may strengthen inappropriate non-coping behaviour in adolescents. Therefore, treatment should focus on decreasing the frequency of pain behaviours and changing the interaction patterns within the family system which are reinforcing the existence of pain behaviours. Specifically, the parents and siblings of non-copers should be encouraged to acknowledge the reality of the pain but not to attend to the exhibited pain behaviours. Lengthy discussions between family members about the pain should be discouraged. Strategies such as having the adolescent record his/her pain in a pain diary which is periodically reviewed by the parents or physician may be effective in helping the adolescent realize that the pain is being taken seriously.

As mentioned previously, the extreme variation in the behaviour of non-copers suggests the possibility of subgroups of non-coping adolescents. Future research in this area depends on the development of valid and reliable assessment techniques to differentiate between the subgroups. Observational methods similar to the one used in this study may prove to be one effective way to discriminate between subgroups of non-coping adolescents. Self-report measures of depression and anxiety may also be helpful. If future research does indicate that there are subgroups of non-coping chronic pain patients, the development of treatments tailored to each subgroup will

be necessary. The treatment implications discussed above may be most effective with an operant conditioned group. However, techniques such as relaxation training, biofeedback, cognitive coping and assertiveness training may also be effective.

Summary and Conclusions

In summary, several of the measures used in the study were not found to be helpful in determining whether or not an adolescent was coping with his/her pain. That is, neither the intensity of pain nor the duration of suffering discriminated between the two groups. In addition, mothers of non-copers did not report more concern about their child than did mothers of copers. The general family environment of copers and non-copers also appeared to be similar. Therefore, whether or not an adolescent copes with his/her chronic pain does not appear to be determined by the pain's intensity, the length of time that they have suffered, their general family characteristics or a specific personality profile. However, there were clear behavioural differences between the behaviour of coping and non-coping adolescents and their mothers when they were placed in a pain-oriented situation.

The observations during the interaction task in this study suggest a picture of a non-coping adolescent as an adolescent who is non-compliant, negative, likely to give up and complain of pain when placed in a pain-oriented

situation. In addition, the non-coping adolescent is likely to be the object of comments from his/her mother that discourage coping and on-task behaviour. Moreover, the mothers of non-coping adolescents tend to express both encouragement and discouragement and generally intrude more with any type of behaviour that is exhibited by the child. The possibility exists that, at least when in a pain oriented situation, a non-coping adolescent receives contradictory messages from his/her mother.

Although the results do not demonstrate a causal relationship between parent-child interaction and coping, the findings lend general support to the operant conditioning model that pain behaviours communicate the fact that an individual is experiencing pain and are subject to operant conditioning processes. In addition, Minuchin's model of overinvolvement and overprotection within the families of non-coping chronic pain patients was partially supported in that these seem to be maternal characteristics in pain-oriented situations. However, the non-coping adolescents did not perceive these to be general characteristics of their families.

The extreme variation in the behaviour of non-coping adolescents suggests that non-copers are not a homogeneous population. Further research is needed to determine if there are subgroups of non-coping chronic pain patients.

The results of the study suggest that individual therapy would not be an effective treatment for non-coping

adolescents. Rather, family therapy would be the treatment of choice.

Recommendations for Future Research

The present study was one of the first investigations of adolescents with chronic pain and therefore requires replication. Although a number of research recommendations have been mentioned throughout the discussion, a few additional ones will follow.

Several questions related to the issue of generalization require further investigation. One obvious question is the influence of the task characteristics. Future studies are needed to determine if the present findings generalize to non-pain oriented tasks (i.e., problem solving tasks), or if they are specific to pain-related tasks.

Another question is whether fathers interact differentially with their respective non-coping and coping adolescents. The examination of the interactions of both parents when their child is placed in a similar situation would also be a worthwhile area of investigation.

The present study measured child personality with the Personality Inventory for Children. It would be interesting to have the adolescents themselves complete a personality questionnaire (i.e., MMPI) to determine if there is a difference in how non-coping and coping adolescents perceive themselves.

Finally, the validity of pain behaviours as measures

of adolescent pain warrants further investigation. The validity of pain behaviours could be examined by comparing the frequency of the behaviours to judgements of pain intensity by naive observers. In addition, the question of whether or not there are changes in the frequency of pain behaviours exhibited by adolescents following treatment warrants investigation.

· Appendix A:

Physician Referral Form

Children with chronic intractable benign pain are to be screened to determine if their condition warrants school absence on a regular basis.

Child's Name: _____

Date of Birth: _____

Home Address: _____

Telephone Number: _____

Number of days of school missed in previous 2 months. _____

Is child continuing to miss school? _____

Check one of the following:

☐

Condition definitely warrants school absence of 3 or more days per month.

☐

Condition may or may not warrant school absence of 3 or more days per month.

☐

Condition definitely does not warrant school absence of 3 or more days per month.

Does the child have a serious or life-threatening illness? _____

Do any of the following characterize the child:

mental retardation _____
mental illness _____
major behaviour disorder _____

Would exercise tasks (i.e., sit-ups, step-ups, arm-curls) over a 15 minute period cause any physical harm to this child? _____

Appendix B:
Daily Absence Record

GRADE:

[illegible]

INSTRUCTIONS:

Please complete the above student's absence record for the months indicated. If the whole day was missed, place a one under the appropriate date. If only half a day was missed, please indicate this by marking $\frac{1}{2}$ in the appropriate space.

PARENTAL CONSENT:

I hereby give my permission for the school to release the above information to the Department of Psychology, Children's Hospital of Eastern Ontario.

(PARENT'S SIGNATURE)

Date:

Witness:

Appendix C:
Letter to Physicians

Appendix C

Letter to Physicians



Children's Hospital of Eastern Ontario

Hôpital pour enfants de l'est de l'Ontario

Dear Dr.

An interdisciplinary group, including psychology, orthopedics, physiatry, and physiotherapy is conducting a research study involving adolescents between the ages of 11 and 17 who have chronic intractable benign pain. The purpose of the study is to compare the mother-child interaction of children who are not coping well with children who are coping well. Our major criteria for coping is school attendance. This study which has been approved by the research committee is descriptive only and does not involve long-term treatment. However, a consultation will be held with each family that has participated in the study to discuss possible modes of intervention. In addition, a letter of consultation will be sent to the referring physician.

We would be pleased to accept referrals for non-coping subjects between the ages of 11 and 17 who would be willing to participate with their mother in the study. Potential non-coping subjects should meet the following criteria:

- 1) Major complaint is pain of greater than 3 months duration. The pain experienced may be limb, shoulder or back pain, stomachache or headache.
- 2) Child is judged by his/her physician to have chronic benign intractable pain which does not warrant school absence.
- 3) Child has missed more than 3 days of school per month because of pain for at least the past 2 months and is continuing to miss school.

Children who have a serious or life-threatening illness or who are characterized by mental retardation, mental illness or a major behavioural disorder (other than the problems with pain) are not appropriate subjects for this study.

If you are aware of any English-speaking children who meet the above criteria, could you please contact Dr. Pat McGrath or Mrs. J. Geier, M.A. at 737-2492 or 737-6643.

Sincerely,

Patrick McGrath, Ph.D.
Senior Psychologist
Behavioural Program

Appendix D:

Informed Consent



Children's Hospital of Eastern Ontario
Hôpital pour enfants de l'est de l'Ontario

INFORMED CONSENT

Mrs. J. Geier, M.A. and Dr. P. McGrath of the Department of Psychology are conducting a study at the Child Study Centre of the University of Ottawa to investigate the problem of chronic pain in children. The study will focus on factors affecting pain and children's attempts to cope with and control their pain.

Your involvement in the study will require two appointments, one of approximately 30 minutes and the other of approximately 1½ hours in duration. At both appointments, children will be required to complete a series of physical exercises that their physician has approved. The child's mother will be present during this 15 minute period. In addition, the children and their mothers will each be asked to complete a questionnaire.

A video recording will be made during the exercise portion of the study. The recordings will be erased at the completion of the research project. There are no known negative effects of the procedures in this study, however, some pain may occur during the exercise tasks. All information will be confidential, however, a report will be sent to your family physician.

You may withdraw from the study at any time without affecting the availability of future treatment from the hospital. Any questions or comments you have may be directed at anytime to Mrs. J. Geier or Dr. McGrath at 737-2492.

I am informed of, and agree to participate in this study.

(child's signature)

I am informed of, and agree to participate with my child _____,
in this study.

Mother's Signature _____

Date _____

Witness _____

Appendix E:

Pain Diary

Appendix E

INSTRUCTIONS FOR PAIN DIARY

1. Be sure to fill out your own pain diary at breakfast, lunch, dinner and bedtime each day.
2. Fill in the diary, for how you are at the time.
3. Intensity Rating: Use the numbers from the Intensity Rating chart at the bottom of the page to show how you are at the time. Be sure to mark an "0" if you have no pain.
4. Other Symptoms: Write in anything else you feel at this time, such as nausea, vomiting, dizziness, visual disturbance, loss of appetite... etc. If you feel nothing else draw a line through the space.
5. Medication: Please write in the name and amount of any medicine you have taken since the last time period. If none was taken draw a line through the space.
6. Possible Cause: Write in anything you think might have caused the pain at this time, such as a change in the weather, a particular activity, an argument with parents or friends, fatigue...etc. If you don't know, draw a line through the space.

PAIN DIARY

Name: _____

Week beginning: _____

FILL IN THIS FORM AT BREAKFAST, LUNCH, DINNER AND BEDTIME EACH DAY

Time	Intensity Rating	Other Symptoms	Medication	Possible Cause
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				
Breakfast				
Lunch				
Dinner				
Bedtime				

INTENSITY RATINGS

- 0 - No Pain
- 1 - Pain - I am only aware of it if I pay attention to it.
- 2 - Pain - but I can ignore it at times
- 3 - Pain - I can't ignore it but I can do my usual activities.
- 4 - Pain - it's difficult for me to concentrate, I can only do easy activities.
- 5 - Pain - such that I can't do anything.

Appendix F:

Response Class Matrices

MATRIX 1

Child Consequent Behaviour

Parent Behaviour	Pain Expression	On-Task Behaviour	Off-Task Behaviour	Negative	No Response
Encourage Coping					
Discourage Coping					
Inter-action					
Request/Command					
No Response					

MATRIX 2

Parent Consequent Behaviour

Child Behaviour	Encourage	Discourage	Inter-action	Request/Command	No Response
Pain Expression					
On-Task Behaviour					
Off-Task Behaviour					
Negative					
No Response					

Appendix G

Response class matrix: Definitions

The response class matrix is a generalized method of recording behaviours in relation to specified antecedent and consequent events in the environment. The matrix defines classes of behaviours and behaviours of the target person are recorded in relationship to the identified person in the environment. The matrix used in this study included the following child behaviours:

Pain expression: any verbal expression of pain including words such as 'ouch', 'it hurts', or groans. Expressions that are more clearly expressions of exertion should not be scored as pain expressions. Pain expression is scored even if the task is being completed at the same time. Pain expression takes precedence over all other behaviours. Examples of pain expressions are: 'My back feels like it's being torn apart'; 'My stomach hurts'.

On task: Behaviour that is on task. Doing the exercise that is required without complaint or expression of pain.

Off task: Adolescent is not doing assigned task. Adolescent may be talking, asking questions or sitting quietly. Examples: Adolescent is off task and says "School was okay today"; adolescent is off task and says "I haven't tried to do exercises like these for a long time".

Negative: Adolescent verbally indicates anger, refusal or discouragement but not pain. Negative behaviour takes precedence over competing behaviours except pain expression. Examples are: "I quit, I'm not doing anymore of these stupid things"; "I'd like to see you do these"; "This is way too hard".

The matrix also includes the following parent antecedent behaviours:

Encourage coping: The mother verbally encourages coping behaviour. For example, "That's good, you're trying very hard"; "You'll get strong if you keep doing these"; "These exercises don't seem too hard, you should be able to do them without any difficulty".

Discourage coping: The mother verbally discourages coping behaviour. For example, "I think you're getting tired, don't do too many more or you might hurt yourself"; "Doesn't it hurt"; "You must be exhausted", "Don't overdo it, you won't be able to walk later".

Interaction: An attempt to initiate or maintain some type of mutual contact. Verbal comments which are neutral or descriptive. The adult in some way communicates verbally. For example: "How was school today"; "Do you want to get something to eat afterwards"; "How's your friend Jane doing, I haven't seen her lately".

Request/Command: Adult makes direct request or command. Request may be in the form of a question if the tone of the question suggests it is a request. For example: "Don't do it that way"; "Is that the way you're supposed to do it"; "Move down a bit"; "You're not doing it right, hold the weight in your other hand".

No response: No response is scored if there is no response in any of the above categories. For example, adult sits quietly.

The matrix also included the following adult consequent behaviours:

Encourage: The adult verbally encourages the antecedent adolescent behaviour. The following are examples:

- 1) Adolescent complains of pain, mother replies by saying "Where does it hurt?". This would be scored pain expression-encourage.
- 2) Adolescent is on task, mother says "you're doing a great job". This would be scored as on task-encourage.
- 3) Adolescent is off task, mother says "I think that you did more than enough anyway, take a rest now". This would be scored as off task-encourage.
- 4) Adolescent is negative, mother says "Yea, I think this is a pretty stupid thing, what does it have to do with your pain?". This would be scored as negative-encourage.

Discourage: Adult verbally discourages antecedent adolescent behaviour. The following are examples:

- 1) Adolescent expresses pain, mother replies "Oh come on, I bet it doesn't hurt that much, try to do a few more." This would be scored as pain expression-discourage.
- 2) Adolescent is on task, mother says "I think you've done enough, you must be tired". This would be scored as on task-discourage.

3) Adolescent is off task, mother says "Why don't you try to do a few more". This would be scored as off task-discourage.

4) Adolescent is negative, mother says "Come on, it's not stupid, it'll do you good to do some of these exercises". This would be scored as negative-discourage.

Interaction: defined above

Request/Command: defined above

No Response: defined above

Appendix H
Personality Inventory for Children

PERSONALITY INVENTORY FOR CHILDREN

ADMINISTRATION BOOKLET

by ROBERT D. WIRT, Ph.D.
PHILIP D. SEAT, Ph.D.
WILLIAM E. BROEN, Jr., Ph.D.

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LOS ANGELES, CALIFORNIA 90025

A DIVISION OF MANSON WESTERN CORPORATION

This inventory consists of statements about children and family relationships.

DIRECTIONS: First fill in the information requested on the answer sheet; then read each of the statements in this booklet and decide whether it is *true or false as applied to your child*.

Look at the example of the answer sheet shown at the right. In the example the mother decided that statement 25 was true as applied to her child and statement 26 was false as applied to her child.

Section of answer
sheet correctly
marked

	Y T	N F
25	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If a statement is TRUE or MOSTLY TRUE, as applied to your child, use a pencil to blacken between the lines of the column headed YT (Yes or True column. See 25 in the example). If a statement is FALSE or NOT USUALLY TRUE, as applied to your child, blacken between the lines of the column headed NF (No or False column. See 26 in the example).

In marking your answers on the answer sheet, *be sure that the number of the statement agrees with the number on the answer sheet*. Make your marks heavy and black. Erase completely any answer you wish to change. Do not make any marks on this booklet.

DO NOT MAKE ANY MARKS ON THIS BOOKLET

1. My child learned to walk before he (she) was six years old.
2. My child seems average or above average in intelligence.
3. My child is small for his age.
4. Sometimes I think I'm too easy with the child.
5. My child never talks to strangers.
6. My child tends to pity him (her) self.
7. My child often plays with a group of children.
8. My child usually kisses me before going to school or to play.
9. My child hardly ever smiles.
10. Others always listen when my child speaks.
11. My child has hit a school official (teacher etc.).
12. Several times my child had complaints, but the doctor could find nothing wrong.
13. Other children often get mad at my child.
14. Usually my child kisses his (her) parents before going to bed.
15. My child hardly ever needs punishment.
16. My child thinks others are against him or her for racial or religious reasons.
17. My child worries about things that usually only adults worry about.
18. My child was a blue baby.
19. I often wonder if my child is lonely.
20. Usually my child takes things in stride.
21. My child has many friends.
22. My child is troubled by constant coughing.
23. My child is likely to take remarks the wrong way.
24. Little things upset my child.
25. My child keeps thoughts to him (her) self.
26. My child sometimes thinks he or she is someone else.
27. Often my child has to go to bed with a cold.
28. As a younger child, it was impossible to get my child to take a nap.
29. It has been a long time since our family has gone out together.
30. At one time my child was unconscious with an injury to his (her) head.
31. My child's manners sometimes embarrass me.
32. My child has never mentioned his (her) heart racing or pounding.
33. My child seldom gets a restful sleep.
34. My child often tries to show off.
35. My child is always humming to him (her) self.
36. My child has had to have drugs to relax.
37. My child has usually been a quiet child.
38. At times my child has seriously hurt others.
39. My child has never had cramps in the legs.
40. My child has had a severe case of one or more of the following: measles, mumps, encephalitis (sleeping sickness), chicken pox, scarlet fever, whooping cough, meningitis.
41. My child has a good sense of humor.
42. At times my child yells out for no reason.
43. My child sometimes sees things that aren't there.
44. As a child, my child hit other children on the head with sharp toys.
45. My child often complains of being hungry.
46. My child is worried about sin.
47. Stuttering has been a problem for my child.

GO ON TO THE NEXT PAGE

48. My child will beg until I give in.
49. The child's father has been fired from his job several times.
50. Other children don't seem to listen to or notice my child much.
51. My child is fairly helpful in doing chores around the house.
52. My child is rather unattractive.
53. My child is liable to scream if disturbed.
54. My child sometimes undresses outside.
55. My child hardly ever kisses me.
56. My child has little self confidence.
57. Certain foods make my child ill.
58. My child has no special talents.
59. Our family seems to enjoy each other more than most families.
60. My child usually undresses him (her) self for bed.
61. I often wish my child would be more friendly.
62. My child broods some.
63. My child could do better in school if he (she) tried.
64. My child can comb his (her) own hair.
65. My child never liked to be cuddled.
66. At times my child gets so excited you can't understand his (or her) talk.
67. Often my child destroys other children's toys.
68. The child's father seems jealous of the child.
69. My child is usually rejected by other children.
70. My child seems to enjoy destroying things.
71. At times my child pulls out his (her) hair.
72. My child usually comes when called.
73. Now and then my child writes letters to friends.
74. I am afraid my child might be going insane.
75. My child sweats very little.
76. My child seems to delight in smashing things.
77. My child is over-confident in most things.
78. My child has trouble making decisions.
79. My child has had convulsions.
80. Thunder and lightning bother my child.
81. The school says my child needs help in getting along with other children.
82. Lately my child has shown interest in religion.
83. My child loves to hug and kiss.
84. My child often gets up at night.
85. Most of my child's friends are younger than he (she) is.
86. Eating is no problem for my child.
87. Others think my child is "easygoing".
88. Sometimes I think my child's memory has been lost.
89. There is a lot of swearing at our house.
90. I have found out my child has had sex play with the opposite sex.
91. My child never takes the lead in things.
92. My child often asks if I love him (her).
93. My child first sat up before he was one year old.
94. My child would probably take blame rather than lie.
95. My child changes moods quickly.
96. Other children look up to my child as a leader.
97. My child could ride a tricycle by age five years.
98. My child takes criticism easily.
99. My child sometimes gets angry.
100. My child often jumps into things without thinking.
101. My child sometimes hears things others don't hear.
102. My child sometimes swears at me.

GO ON TO THE NEXT PAGE

103. My child is not worried about disease.
104. My child frequently complains of being hot even on cold days.
105. My child's behavior often makes others angry.
106. My child seems bored with school.
107. The child's parents are now separated or divorced.
108. My child gets exhausted so easily.
109. My child belongs to a gang.
110. My child plays a musical instrument.
111. My child often expresses dislike for teachers.
112. My child tends to talk faster than he (she) can think.
113. I can't get my child to do his (her) school lessons.
114. My child stays close to me when we go out.
115. Often my child goes about wringing his (her) hands.
116. My child is sometimes cruel to animals.
117. Recently my child has complained of eye trouble.
118. My child likes to build things from clay or sand.
119. The child's parents have broken up their marriage several times.
120. Sometimes my child runs errands for me.
121. Others think my child is talented.
122. My child is afraid of animals.
123. My child frequently has gas on the stomach (sour stomach).
124. My child is good at lying his (her) way out of trouble.
125. My child often carries a cloth or doll for comfort.
126. The child's parents sometimes forbid the child to play with certain other children.
127. Sometimes my child gets so excited he (she) can't sleep at night.
128. It is not too unlikely that my child will stay in the house for days at a time.

129. My child shows a lot of affection for a pet.
130. My child usually gets up without being called.
131. My child has had brief periods of time when he (she) seems unaware of everything that is going on.
132. My child often cheats other children in deals.
133. The child's parents have to keep after him (her) to do his (her) chores.
134. My child is good at leading games and things.
135. My child is more nervous than most children.
136. My child's feelings are hurt easily.
137. My child usually runs rather than walks.
138. My child sometimes irritates others with practical jokes.
139. My child never played peek-a-boo.
140. My child never worries about what others think.
141. Sometimes my child earns extra money by doing small jobs around the neighborhood.
142. The child's parents try to be as permissive as possible.
143. My child likes to dress like older children.
144. Usually my child eats all the food on his (her) plate.
145. My child is different than most children.
146. A child has a right to disagree with his (her) parents.
147. Others have remarked how polite my child is.
148. My child has original ideas.
149. At one time my child had speech difficulties.
150. My child usually completes something once it is started.
151. My child is afraid of dying.
152. My child carries a weapon (knife, club, etc.).
153. Pestering others is a problem with my child.
154. My child believes in God.
155. My child can cut things with scissors as well as can others of his (her) age.

GO ON TO THE NEXT PAGE

156. I feel I am very close to my child.
157. My child has never been elected to an office in a club or school.
158. My child doesn't seem to care for fun.
159. My child often talks about how strong he (or she) is.
160. At times my child has hit and kicked me.
161. My child sometimes feels things that aren't there.
162. Mistakes are often made by my child just because of hurrying.
163. My child worries about hurting others.
164. My child doesn't seem to care to be with others.
165. My child seems to enjoy talking about nightmares.
166. Others have told me I baby my child.
167. My child has difficulty doing things with his (her) hands.
168. Several times my child has performed in front of a group.
169. Several times my child has asked if he (she) were adopted.
170. Often my child will sleep most of the day on a holiday.
171. Others think my child is mean.
172. My child often stays in his (her) room for hours.
173. My child seems to know everyone in the neighborhood.
174. My child can cry one minute and laugh the next.
175. At times my child scratches his (her) face until it bleeds.
176. Voices sometimes tell my child to do things.
177. Often my child talks back to me.
178. My child has never had any paralysis.
179. My child would never take advantage of others.
180. My child will take the blame for others.
181. My child has to be coaxed or threatened before he (she) will eat.
182. My child has had an operation on his (her) head.
183. My child's allowance is his (her) own to spend.
184. My child usually blames others for any trouble.
185. My child has more than three bowel movements a day.
186. My child can be left home alone without danger.
187. Starting school was very difficult for my child.
188. My child jumps from one thing to another.
189. My child is always talking about the future.
190. My child has been in trouble for attacking others.
191. My child seldom breaks rules.
192. How to raise the child has never been a problem at our house.
193. My child belongs to a club.
194. Several times my child has threatened to kill him (her) self.
195. My child usually doesn't trust others.
196. My child seems too serious minded.
197. My child has more friends than most children.
198. My child cries if left home alone.
199. Often my child goes to the toilet outside the house.
200. Strength impresses my child.
201. My child often hits younger children.
202. My child has many friends of the opposite sex.
203. Often my child does things before thinking.
204. My child seems unhappy about our home life.
205. When my child gets mad, watch out.
206. My child seems shy with the opposite sex.
207. My child never really forgives anyone.
208. My child really has no real friend.

GO ON TO THE NEXT PAGE

209. My child often tells jokes.
My child often tattles (tells) on others.
211. My child has never been away from home at night.
212. My child is as happy as ever.
213. Others often remark how moody my child is.
214. We often argue about who is the boss at our house.
215. My child could walk downstairs alone by age five years.
216. Sometimes my child will go into a rage.
217. My child often complains that others don't understand him (her).
218. My child has to be prevented from eating and drinking too much.
219. The trouble with my child is a "chip on the shoulder."
220. My child has very few friends.
221. My child loves to make fun of others.
222. My child likes to play active games and sports.
223. Others often remark how relaxed my child is.
224. Sometimes I worry about my child's lack of concern for other's feelings.
225. Blushing is a problem for my child.
226. Nothing seems to scare my child.
227. My child can wash him (her) self as well as other children his (her) age.
228. Often my child is afraid of little things.
229. Often my child smashes things when angry.
230. My child doesn't seem to be interested in practical things.
231. I have often been embarrassed by my child's sassiness.
232. My child tends to see how much he (she) can get away with.
233. Others think my child is a "cry baby".

234. My child can't seem to keep attention on anything.
235. My child has never been in trouble because of sex behavior.
236. My child almost never argues.
237. My child gives in too easily.
238. Playing with matches is a problem with my child.
239. My child often disobeys me.
240. The child's mother frequently has crying spells.
241. My child cries when scolded.
242. My child is better than average at sports.
243. Falling down is a problem for my child.
244. The child's parents are not active in community affairs.
245. My child likes to show off.
246. My child sometimes chews on his (her) lips until they are sore.
247. My child has never been spanked.
248. My child loves to rock back and forth when sitting down.
249. My child is a good loser.
250. My child loves to stay over night at a friend's house.
251. My child usually plays with older children.
252. The child's father changes jobs frequently.
253. My child has a weight problem.
254. School has been easy for my child.
255. Others have said my child has a lot of "personality".
256. Sometimes my child wets the bed.
257. My child goes to bed on time without complaining.
258. My child belongs to Boy Scouts, Girl Scouts or some younger branch of these organizations.
259. "Spare the rod, spoil the child" is a true saying.
260. My child can't sit still in school because of nervousness.

GO ON TO THE NEXT PAGE

261. My child has older brothers or sisters.
262. I do not approve of most of my child's friends.
263. My child vomits frequently after meals.
264. Constipation has never been a problem for my child.
265. My child tells of having the same dream over and over.
266. My child likes to "boss" others around.
267. Reading has been a problem for my child.
268. I sometimes "blow up" at the child.
269. My child doesn't seem to have any fear.
270. Parents should be strict with their children.
271. My child is very jealous of others.
272. Five minutes or less is about all my child will ever sit at one time.
273. My child is often restless.
274. We seldom argue about religion at our house.
275. A scolding is enough to make my child behave.
276. My child seldom misses school because of illness.
277. Frequently my child looks under the bed before going to bed.
278. We frequently argue about money matters at our house.
279. My child often talks about the Devil.
280. Often my child sings around the house.
281. My child sometimes disobeys his (her) parents.
282. My child tends to doubt everything others say.
283. Usually my child's legs or arms are swinging.
284. Several times my child has been in trouble for stealing.
285. My child seldom complains of stomach aches.
286. Neither parent has ever been mentally ill.
287. My child takes sleeping pills to get to sleep.
288. My child has never failed a grade in school.
289. If my child can't run things, he (she) won't play.
290. The child's parents can't seem to live within their income.
291. Others have remarked about my child's unusual imagination.
292. I have heard my child swear at others.
293. The child's parents are often out socially.
294. My child is in a special class in school (for slow learners).
295. At times my child has to be held down because of excitement.
296. Others think my child has a "know it all" attitude.
297. My child usually plays alone.
298. My child won't go into the bedroom without someone else there.
299. Several times my child took money from home without permission.
300. Our family attends Church together.
301. My child often talks to him (her) self.
302. Affection is frequently shown in our home.
303. My child loves to work with numbers.
304. Usually my child sees good in everybody.
305. My child often talks about religion.
306. My child sometimes eats too many sweets.
307. My child has never been in trouble with the police.
308. My child often brings friends home.
309. My child could feed him (her) self fairly well by age five years.
310. My child seldom visits a doctor.
311. My child's favorite stories are fairy tales or nursery rhymes.
312. The child's father doesn't understand the child.
313. Nakedness embarrasses my child.

GO ON TO THE NEXT PAGE

314. Dizzy spells are no problem with my child.
315. My child usually falls right to sleep once in bed.
316. My child learned to count things by age six years.
317. The child's father drinks too much.
318. I have several times found my child masturbating (playing with self sexually.).
319. My child could print his (her) first name by age six years.
320. My child tends to brag.
321. My child doesn't seem to learn from mistakes.
322. My child would rather be with adults than with children his (her) own age.
323. My child can't seem to wait for things like other children do.
324. My child tends to be pretty stubborn.
325. My child rarely gets excited.
326. My child often asks questions about sex.
327. My child gets spanked about once a day.
328. My child seldom talks.
329. My child is constantly moving about.
330. My child is very critical of others.
331. My child seldom gets into mischief.
332. My child always does his (her) homework on time.
333. Sometimes during the night my child will crawl in bed with me.
334. My child often vomits when getting a headache.
335. My child is usually a leader in groups.
336. Sometimes my child lies to avoid embarrassment or punishment.
337. I have a terrible time getting my child to take a bath.
338. Car sickness is a problem with my child.
339. I always worry about my child having an accident when he (she) is out.

340. Other children make fun of my child's different ideas.
341. Our whole family seldom gets to eat together.
342. My child usually stays neat and clean.
343. Reading is my child's favorite pasttime.
344. My child loves excitement.
345. My child is often ashamed of the family.
346. Often my child plays too hard.
347. The child's father usually makes the important decisions at our house.
348. "Bad days" are frequent with my child.
349. My child often visits art museums or attends concerts.
350. My child insists on keeping the light on while sleeping.
351. My child could be trusted to walk upstairs alone before he (she) was four years old.
352. My child seems to prefer adults to children.
353. Sometimes my child's muscles twitch.
354. Much of my child's time is taken up with art or music.
355. My child sometimes smears self and walls after going to the toilet.
356. Punishment is usually given by the child's father.
357. My child never stays out too late at night.
358. My child seldom if ever has dizzy spells.
359. Chewing fingernails is a problem for my child.
360. My child is dependent on others.
361. An interruption is likely to get my child angry.
362. A lot of my child's suggestions as well as actions are very impractical.
363. During the past few years we have moved often.
364. My child worries about talking to others.
365. My child never sleep walks.

GO ON TO THE NEXT PAGE

366. My child first talked before he (she) was two years old.
367. My child gets common colds more often than most children.
368. My child will usually admit being wrong.
369. The child's parents disagree a lot about rearing the child.
370. School teachers complain that my child can't sit still.
371. Often my child locks himself (herself) in the bedroom.
372. My child has some bad habits.
373. Several times my child has spoken of a lump in his (her) throat.
374. "Head in the clouds" describes my child.
375. We often have friends in for a social evening.
376. My child often wakes up screaming.
377. My child drools when eating.
378. My child has been with me since he (she) was born.
379. Often my child will laugh for no apparent reason.
380. My child frequently has nightmares.
381. My child is often the center of attention.
382. My child almost never acts selfishly.
383. My child sometimes skips school.
384. My child is usually in good spirits.
385. The child's parents are active in church.
386. My child seems fearful of blood.
387. My child is not as strong as most children.
388. My child seems more clumsy than other children his (her) age.
389. Others have remarked how self confident my child is in a group.
390. Others often remark how sensible my child is.
391. The child's father seldom helps around the house.
392. My child loves to play in water.
393. Arguing is my child's biggest downfall.
394. My child seems to understand everything that is said.
395. My child will do anything on a dare.
396. My child always seems to have a cold.
397. At times my child just keeps on spinning around.
398. Sometimes the child's father will go away for days after an argument.
399. Sometimes my child gets so nervous his (her) hands shake.
400. Skin rash has been a problem with my child.
401. I have often found my child playing in the toilet.
402. The child's father sometimes gets drunk and mean.
403. My child often plays sports.
404. My child sometimes becomes envious of the possessions or good fortune of others.
405. Shyness is my child's biggest trouble.
406. My child often talks in rhymes.
407. The child's mother makes most of the important decisions in the home.
408. My child will do anything for a laugh.
409. My child is a healthy child.
410. My child thinks others are plotting against him (or her.)
411. My child has difficulty holding his (her) head up.
412. Usually my child gets along well with others.
413. The child's parents do not get along with the neighbors.
414. My child seems eager to please others.
415. My child seems to have no shame.
416. Usually my child plays inside.
417. The child's father seldom misses work.

GO ON TO THE NEXT PAGE

418. My child gets lost easily.
419. My child has the habit of picking his (her) nose until it bleeds.
420. My child has had asthma attacks. -
421. My child is put to bed early if he (she) disturbs the rest of the family.
422. Often my child takes walks alone.
423. My child often has headaches.
424. The child's parents have set firm rules that must be obeyed.
425. Often my child will wander about aimlessly.
426. My child seems to get along with everyone.
427. My child is easily embarrassed.
428. My child is very popular with other children.
429. My child gets confused easily.
430. The child's father dislikes his present job.
431. My child is almost always smiling.
432. My child has more accidents resulting in cuts, bruises, and broken bones than other children.
433. Several times my child has threatened to run away.
434. At times my child has difficulty breathing.
435. There is always a lot of argument at our dinner table.
436. Others don't understand my child.
437. My child plays with friends who are often in trouble.
438. My child seldom has nose bleeds.
439. My child often talks of loving someone much older.
440. Parents should teach their children who is boss.
441. My child has never been expelled from school.
442. Sometimes my child acts like a clown.
443. My child loses most friends because of his (or her) temper.
444. Our house is always in a mess.
445. My child whines a lot.
446. My child is shy with children his (her) own age.
447. My child doesn't seem to feel pain like others.
448. My child was difficult to toilet train.
449. My child wants a lot of attention when sick.
450. My child saves most of his (her) spending money.
451. The child's mother or father have never been divorced.
452. My child can count change when buying something.
453. Winning a game seems more important than the fun of playing to my child.
454. The child's mother strongly dislikes housework.
455. My child has never run away from home.
456. My child needs laxatives.
457. My child shows unusual talent.
458. A mother's place is in the home.
459. Speaking up is no problem for my child.
460. I had an especially difficult time with temper tantrums in my child at an early age.
461. My child worries a lot about physical health.
462. My child can tell the time fairly well.
463. Sometimes my child comes home with torn clothes.
464. Sharing things has been no problem for my child.
465. Many times my child has become violent.
466. The child's parents always discuss important matters before making a decision.
467. I have a problem stopping my child from eating everything.
468. The child's mother can't stand to stay home all day.
469. Murder and crime stories seem to be my child's favorites.
470. My child insists on polished shoes.
471. My child can take a bath by him (her) self.

GO ON TO THE NEXT PAGE

472. My child smokes at home.
473. Recently my child has complained of chest pains.
474. The child's father frequently "blows up" at the child.
475. My child sees strange things.
476. My child is shy with adults.
477. Before going to sleep my child needs a teddy bear or doll in bed.
478. Frequently my child argues with others.
479. I have heard that my child drinks alcohol.
480. There is seldom a need to correct or criticize my child.
481. My child is rather absent-minded.
482. Others have remarked how pale my child looks.
483. My child bites his (her) fingernails or toenails.
484. The child's father is home almost every evening.
485. My child repeats numbers and letters over and over.
486. My child is always telling lies.
487. Recently the child's parents have argued with the school officials.
488. When talking my child often jumps from one topic to another.
489. By the age of five years, my child could dress him (her) self except for tying things.
490. My child most always tells me where he (she) is going to play.
491. The child's parents seldom visit the school.
492. My child boasts about being sent to the principal in school.
493. My child never has fainting spells.
494. My child is crabby most of the time.
495. My child spends over fifteen minutes at a time combing his (her) hair.
496. Music lessons have to be forced on my child.
497. The child's father is too strict with the child.
498. My child has as much pep and energy as most children.
499. Recently the school has sent home notes about my child's bad behavior.
500. A parent should try to treat a child as an equal.
501. My child often has unusual ideas.
502. My child will never clean his (or her) room.
503. Sometimes my child will put off doing a chore.
504. My child is able to keep out of everyday dangers.
505. My child often talks about death.
506. My child usually does just what you tell him (her) not to do.
507. My child has frequently been hospitalized.
508. My child likes parties.
509. My child always shows affection to me.
510. The child's father gets along fine with the child.
511. Sex seems to concern my child more than others.
512. My child is usually rested after a good sleep.
513. My child has been difficult to manage.
514. Children should be seen and not heard.
515. Hardly a day goes by when my child doesn't get into a fight.
516. My child often sits and reads the dictionary.
517. Others say our family is close.
518. Working puzzles is one of my child's favorite hobbies.
519. Most of my child's time is taken up watching television.
520. Frequently my child has a high fever.
521. Sometimes my child's room is messy.
522. I have seen my child laugh when others get hurt.
523. My child often talks of flying off into space.
524. Sometimes my child irritates me.

GO ON TO THE NEXT PAGE

525. Often my child tells fantastic stories.
526. The child's father is hardly ever home.
527. My child is seldom short of breath.
528. Sometimes I don't understand what my child means.
529. My child usually feels sorry when he (or she) has hurt others.
530. My child is usually afraid to meet new people.
531. My child almost never needs punishing or scolding.
532. My child speaks of him (her) self as stupid or dumb.
533. My child could eat with a fork before age four years.
534. Often my child complains of blurring (blurred vision).
535. There is a lot of tension in our home.
536. My child needs protection from every day dangers.
537. My child has a terrible temper.
538. My child daydreams quite a bit.
539. It is necessary for the child's mother to work outside the home.
540. Several times my child has threatened to kill others.
541. The child's father spends very little time with the child.
542. My child refuses to do anything around the house.
543. My child usually stays mad a long time.
544. My child needs help when going to the toilet.
545. My child is adopted.
546. My child runs around the house naked.
547. My child always insists on wearing clean clothes.
548. My child respects the property of others.
549. My child seldom has back pains.
550. Frequently my child will put his (her) hands over his (her) ears.
551. The child's father has very little patience with the child.

552. My child wants to sit in the bath tub for hours.
553. The child's father has held the same job for the last five years (or since marriage).
554. I have no trouble getting my child to bed at night.
555. My child often speaks of being smarter than others.
556. My child loves to read about murder and other crimes.
557. My child didn't have colic as an infant.
558. My child learned to drink from a cup by age three years.
559. The child's parents frequently quarrel.
560. Often my child sets goals that are too high.
561. My child's headaches usually start with a pain in the back of the neck.
562. Everything has to be perfect or my child isn't satisfied.
563. The child's parents belong to several clubs or community groups.
564. My child gets pneumonia almost every year.
565. Spanking doesn't seem to affect my child.
566. Lately my child has had diarrhea a lot.
567. My child was a "planned" child.
568. My child talks a lot about his (her) size or weight.
569. My child tends to repeat everything (parroting).
570. My child has never had face twitchings.
571. My child was completely toilet trained by three years of age.
572. My child often will cry for no apparent reason.
573. Both parents enjoy children.
574. My child seldom talks about sickness.
575. My child tends to swallow food without chewing it.
576. My child will worry a lot before starting something new.
577. My child is afraid of strangers.

GO ON TO THE NEXT PAGE

578. My child has trouble swallowing.
579. My child had difficulty breathing at birth.
580. My child shows a lot of interest in fire.
581. My child usually looks at the bright side of things.
582. My child is afraid of the dark.
583. Our marriage has been very unstable (shaky).
584. My child usually keeps his (her) mouth open.
585. My child often has crying spells.
586. My child often talks about the future.
587. My child never seems to have a goal.
588. Sometimes my child gets hot all over without reason.
589. Nothing seems to get my child upset.
590. Delivery of my child was with instruments.
591. Often my child will lick his (her) lips.
592. My child seems tired most of the time.
593. My child refused or couldn't suck as an infant.
594. My child is exceptionally neat and clean.
595. Others have remarked how smart my child is.
596. My child takes illness harder than most children.
597. My child was a premature or over-due baby.
598. Money seems to be my child's biggest interest.
599. My child goes on dates with the opposite sex.
600. Usually my child will sleep all night without awakening.

END

Appendix I

PIC: Clinical scale descriptions

Lie scale: This scale is intended to identify a defensive response set on the part of the respondent who tends to ascribe the most virtuous of behaviours and to deny minor commonly-occurring behaviour problems in the child being described.

F scale: This scale was constructed to identify possible deviant response sets, such as deliberate or unintentional exaggeration of symptoms or random responding because of an uncooperative attitude or poor reading ability.

Defensiveness scale: This scale was constructed to measure the tendency of a parent to be defensive about their child's behaviour during an evaluation.

Adjustment scale: This scale was designed as a screening device to identify children who are in need of psychological evaluation and as a general measure of poor psychological adjustment.

Achievement scale: This scale was constructed to assist in the identification of children whose academic achievement is significantly below age expectation though they may possess adequate intellectual capacity.

Intellectual screening scale: This scale may be used to identify children who have intellectual impairment and for whom an individually administered intellectual evaluation is indicated.

Development scale: High score on this scale suggest deficits in motor coordination, language skills, or cognitive functions that may be reflected in poor classroom performance.

Somatic concern scale: Elevation on this scale suggests frequent concern with physical symptoms that generally have a functional etiology or functional component.

Depression scale: Though few children are given a primary diagnosis of depression, it is a common component of psychological disturbance. This scale was designed to measure the importance of that component for a particular child, following the definition of depression in children formulated by the Group for the Advancement of Psychiatry (1966).

Family relations scale: This scale measures family effectiveness and cohesion. High scores may indicate parental maladjustment, marital discord, unhappiness in the home, lack of appropriate discipline or appreciation for the rights of the child.

Delinquency scale: This scale correctly identifies 95% of youths who are adjudicated delinquent from those who are not.

Withdrawal scale: This scale identifies children who avoid social contact, desire to remain isolated, have few friends, and distrust others.

Anxiety scale: This scale indicates that a child manifests symptoms of anxiety such as: limited frustration tolerance, exaggeration of problems or concern, worries which reflect parental concerns, behavioural and physiological correlates of anxiety, irrational fears and worries, and nightmares.

Psychosis scale: This scale was constructed to discriminate children with psychotic symptomatology from normal, behaviourally disturbed nonpsychotic, and retarded children.

Hyperactivity scale: This scale was constructed to identify children who display characteristics frequently associated with the Attention Disorder with Hyperactivity.

Social skills scale: This scale is composed of items that reflect effective social relations in childhood; ability to lead and to follow, level of active participation in organized activities, self-confidence and poise in social situations, and tact in interpersonal relations.

Taken from Wirt & Lachar (1981)

Appendix J:

Family Adaptability and Cohesion Evaluation Scale

FACES II ITEMS

by

David H. Olson, Joyce Portner, and Richard Bell

1. Family members are supportive of each other during difficult times.
2. In our family, it is easy for everyone to express his/her opinion.
3. It is easier to discuss problems with people outside the family than with other family members.
4. Each family members has input in major family decisions.
5. Our family gathers together in the same room.
6. Children have a say in their discipline.
7. Our family does things together.
8. Family members discuss problems and feel good about the solutions.
9. In our family, everyone goes his/her own way.
10. We shift household responsibilities from person to person.
11. Family members know each other's close friends.
12. It is hard to know what the rules are in our family.
13. Family members consult other family members on their decisions.
14. Family members say what they want.
15. We have difficulty thinking of things to do as a family.
16. In solving problems, the children's suggestions are followed.
17. Family members feel very close to each other.
18. Discipline is fair in our family.
19. Family members feel closer to people outside the family than to other family members.
20. Our family tries new ways of dealing with problems.
21. Family members go along with what the family decides to do.
22. In our family, everyone shares responsibilities.
23. Family members like to spend their free time with each other.
24. It is difficult to get a rule changed in our family.
25. Family members avoid each other at home.
26. When problems arise, we compromise.
27. We approve of each other's friends.
28. Family members are afraid to say what is on their minds.
29. Family members pair up rather than do things as a total family.
30. Family members share interests and hobbies with each other.

FACES II ANSWER SHEET



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INSTRUCTIONS: Complete Part I completely, and then complete Part II. Please answer all questions, using the following scale.

1	2	3	4	5
ALMOST NEVER	ONCE IN A WHILE	SOMETIMES	FREQUENTLY	ALMOST ALWAYS

PART I:

How Would You Describe Your Family Now?

- | | |
|-----------|-----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| 5. _____ | 6. _____ |
| 7. _____ | 8. _____ |
| 9. _____ | 10. _____ |
| 11. _____ | 12. _____ |
| 13. _____ | 14. _____ |
| 15. _____ | 16. _____ |
| 17. _____ | 18. _____ |
| 19. _____ | 20. _____ |
| 21. _____ | 22. _____ |
| 23. _____ | 24. _____ |
| 25. _____ | 26. _____ |
| 27. _____ | 28. _____ |
| 29. _____ | |
| 30. _____ | |

PART II:

How Would You Like Your Family TO BE?

- | | |
|-----------|-----------|
| 31. _____ | 32. _____ |
| 33. _____ | 34. _____ |
| 35. _____ | 36. _____ |
| 37. _____ | 38. _____ |
| 39. _____ | 40. _____ |
| 41. _____ | 42. _____ |
| 43. _____ | 44. _____ |
| 45. _____ | 46. _____ |
| 47. _____ | 48. _____ |
| 49. _____ | 50. _____ |
| 51. _____ | 52. _____ |
| 53. _____ | 54. _____ |
| 55. _____ | 56. _____ |
| 57. _____ | 58. _____ |
| 59. _____ | |
| 60. _____ | |

Appendix K

Means, standard deviations and t-values for coping subjects behaviour over the two sessions (n=10)

	Session 1		Session 2		
Variable	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
<hr/>					
<u>Child Behaviours</u>					
Pain Expression	1.00	1.33	.60	1.08	.61
On-task	87.40	3.95	86.00	5.66	1.21
Off-task	1.00	3.16	2.90	5.76	1.93
Negative	.60	.70	.50	.97	.32
 <u>Parent Behaviours</u>					
Encourage coping	.70	.95	.60	.84	.26
Discourage coping	.70	.82	.80	1.03	.25

Means, standard deviations and t-values for non-coping subjects behaviour over the two sessions (n=10)

	Session 1		Session 2		
Variable	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>t</u>
<u>Child Behaviours</u>					
Pain expression	4.40	5.10	2.60	3.10	1.23
On-task	74.80	13.37	76.60	16.47	.61
Off-task	5.70	8.58	8.00	13.55	.30
Negative	5.10	4.28	2.80	4.24	1.27
<u>Parent Behaviours</u>					
Encourage coping	2.20	2.44	1.60	1.96	.72
Discourage coping	5.20	3.99	3.30	1.89	1.81

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